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*BERKELEY'S THEORY OF VISION*

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# *Berkeley's Theory of Vision*

A CRITICAL EXAMINATION OF  
BISHOP BERKELEY'S  
*ESSAY TOWARDS A NEW THEORY OF VISION*

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But we ought to consider that the more closely and ingeniously men reason from false principles, the more absurdities they will be led into; and when such absurdities help to bring to light the false principles from which they are drawn, they may be the more easily forgiven.

Thomas Reid, *Essays on the Intellectual Powers of Man*.



## Preface

Berkeley's *Essay towards a New Theory of Vision* is a work of genius, and one neglected by most philosophers. The reason may be that it is thought to be 'mere psychology', or else but a prolegomenon to the *Principles of Human Knowledge*. The object of the present study is to bring out its philosophical importance, an importance quite independent of the main doctrines of the *Principles*. But the only real path to the understanding of a philosopher's view (and the only real compliment we can pay to his thought) is to consider whether what he says is true. This essay is therefore critical as well as expository.

It may seem out of place that a whole chapter of a book on Berkeley is devoted to discussing certain views of Hume on taste, sound and smell, questions which Berkeley does *not* discuss in the *New Theory*. There are two reasons for this. In the first place it will be shown that Hume's work here forms the natural extension and completion of the main theme in the *New Theory*. In the second place Hume's views on this topic are also neglected, although deserving and requiring much discussion.

I am deeply grateful to Professor H. H. Price, and to Mr D. C. Stove of the University of Sydney, each of whom read my manuscript and submitted it to a most detailed commentary and criticism. My wife has given me invaluable help on points of style. Those who know the work of Professor John Anderson, of the University of Sydney, will perceive my debt to his teaching on numerous occasions throughout this essay.

This study was originally written some years ago; in the meantime I have changed my philosophical position on some points. But I have judged it better to let the book stand as it is, rather than risk destroying its unity by tinkering with it. Publication has been made possible by a grant from the Australian Humanities Research Council, to whom I am very grateful.

D.M.A.

University of Melbourne  
May 1960



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## Introduction

This essay is a critical examination of Berkeley's *Essay towards a New Theory of Vision*. In section 2 Berkeley says that 'distance, of itself and immediately, cannot be seen', and this premiss is the basis of his conclusions. The most important of these are, firstly, that whatever is immediately seen has no existence outside the mind; and, secondly, that visible and tangible objects have no manner of spatial connection. The contributions to the psychology of vision, which the *Essay* also contains, are subsidiary to these two main themes.

However, it will be argued that the first conclusion does not follow validly from Berkeley's premiss, and hence that the *Essay* really does nothing to support Berkeleian Immaterialism. This means that, whatever Berkeley's confusions on the matter, we ought to abandon the tradition of interpretation that sees the *Essay* as a half-way house to the *Principles of Human Knowledge*.

It will be argued, on the other hand, that the second conclusion, that visible and tangible objects are in no way spatially connected, does validly follow from Berkeley's original premiss. The main theme of the *Essay* therefore emerges as being a heterodox view of the general structure of the reality revealed to the senses of sight and touch, or, in more Berkeleian fashion, a heterodox view of the relation of visual and tangible ideas.

It will be argued, however, that Berkeley's original premiss cannot be established; and further that the consequence it leads to is unacceptable. We are thus led back to a more orthodox account of the relations of the objects of sight and touch. Finally, the inquiry will be extended to the objects of the other senses: sounds, tastes and smells, which are not considered by Berkeley; and their relations to the objects of sight and touch will be discussed.

The Luce and Jessop edition of Berkeley's works has been used throughout. The abbreviation *N.T.V.* is used for the *New Theory of Vision*, and *T.V.V.* for Berkeley's pamphlet *The Theory of Vision Vindicated*.





# I

## *The Perception of Distance by Sight*

(Sections 1-40)

### 1. THE PLAN OF BERKELEY'S 'ESSAY'

Like all Berkeley's writings, the *New Theory of Vision* has a clearly defined organization. In the first section he says:

My design is to show the manner wherein we perceive by sight the distance, magnitude and situation of objects. Also to consider the difference there is betwixt the ideas of sight and touch, and whether there be any idea common to both senses.

This paragraph gives us the four main divisions of the *Essay*:

1. The manner wherein we perceive by sight the *distance* of objects (sections 2-51).
2. The manner wherein we perceive by sight the *magnitude* of objects (sections 52-87).
3. The manner wherein we perceive by sight the *situation*<sup>1</sup> of objects (sections 88-120).
4. The difference between the 'ideas' of sight and touch. Is there any 'idea' common to both senses? (sections 121-59).

As we shall see, however, it is the first of these divisions which is the important one, for the main themes of the *Essay* are all developed in it. The other three do little more than fill out and illustrate the argument. It seems worthwhile, therefore, to indicate the further organization of the first division, since it will be our main concern.

- (i) (Section 2) It is argued (in conformity with contemporary opinion) that distance is not immediately seen.
- (ii) (Sections 3-7) The received view of the way we manage nevertheless to judge distance by the eye is set out.
- (iii) (Sections 8-15) Reasons are given for rejecting this received view.

<sup>1</sup> Berkeley uses the word 'situation' in a special sense here. Cf. section 10 of the present essay.

- (iv) (Sections 16-28) An account of the way we actually do judge distance by the eye is offered.
- (v) (Sections 29-40) A complicated optical phenomenon, which had baffled previous theorists, is discussed, and it is shown it can be accounted for by Berkeley's theory of the way we judge distance by the eye.
- (vi) (Sections 41-51) The philosophical doctrines to which this investigation into vision leads are set out.

The fifth sub-division is of importance for psycho-physical investigations of vision, but is of little philosophical interest. We shall give it very little attention. Perhaps it is the forbiddingly technical, and obviously unphilosophical, nature of this discussion that has caused the comparative neglect by philosophers of the *New Theory of Vision* as a whole. In this first chapter our concern will be with sections 2 to 28, that is, with Berkeley's discussion of the visual perception of distance.

## 2. WHAT DOES IT MEAN TO SAY THAT DISTANCE IS NOT IMMEDIATELY SEEN?

Berkeley begins section 2 by saying: 'It is, I think, agreed by all that distance, of itself and immediately, cannot be seen.' The whole argument of the *Essay*, it will emerge, depends on this contention, and so it deserves most careful scrutiny. Our first concern must be to understand what Berkeley means by saying that distance is not immediately seen.

The word 'distance' gives no trouble; by 'distance' here Berkeley simply means distance out from the eye (sometimes he calls it 'outness'), that is, along the line at right-angles to the retina. Rather it is the phrase 'immediately seen' that presents problems. What does it mean to say distance is not 'immediately seen'? Berkeley himself did not see the need for explicit explanation of the phrase, and we have to come at his meaning by examining his use of the words in the *Essay*, and in his later writings.

Two suggestions may be dismissed from the start. Firstly, it might be thought that Berkeley is only pointing to the fact that we cannot make any *exact* estimates of distance using our eyes alone. I can see that the man is nearer to me than the tree, but in order to find out exactly how far away each object is, I must measure the distances. But this cannot be Berkeley's meaning. For he would say that I cannot even *immediately* see that the

man is nearer than the tree. His contention is meant to cover all visual estimation of distance, even the most rough-and-ready.

Secondly, he does not seem to be denying that, very often, we can make visual estimates of distance 'at a glance'. It does not look as though he is asserting that all visual judgments of distance involve some *process* of inference, some pause which gives us time to work out the distance of the visible objects from clues given by vision. It seems that he would be quite prepared to admit that, in the temporal sense of the word, visual estimations of distance may be as 'immediate' as anything else that we came to believe as the result of using our eyes. In this temporal sense of 'immediately', I can see that the tree is more distant than the man just as immediately as I can see that it is to the left of the man, or that its leaves are green.

We may come closer to Berkeley's meaning by considering a passage in the *Three Dialogues*, together with a passage in the *Essay* itself. In the former Philonous asks Hylas:

You will farther inform me, whether we immediately perceive by sight anything beside light, and colours, and figures: or by hearing anything but sounds: by the palate, anything beside tastes: by the smell, beside odours: or by the touch, more than tangible qualities.<sup>2</sup>

Hylas answers that we do not. Again, in the *Essay* itself, he says: 'Sitting in my study I hear a coach drive along the street'<sup>3</sup> and he implies that, while the noise of the coach is immediately heard, we cannot say that the coach is immediately heard. Now Berkeley does seem to be pointing to a real distinction here. In such a situation, although I can say with linguistic propriety and truth that I hear the coach, there is also some important sense in which I cannot hear the coach, but only the sound which the coach makes. (Let us suppose, for the sake of argument, that the noise a coach makes does not form part of our concept of a coach.) In order to hear the noise that the coach makes, all that is necessary is that my ears be in good order, but this will not suffice to 'hear the coach'—in the latter case a background of experience of a certain sort is presupposed. It is not implied that I first hear the sound, and afterwards realize that there is a coach in the street; in point of time I may 'hear the coach' as immediately as I 'hear the sound'. Nor need it be implied

<sup>2</sup> *The Works of George Berkeley Bishop of Cloyne*, ed. A. A. Luce and T. E. Jessop (Nelson, Edinburgh, 1948), ii. 175.

<sup>3</sup> *N.T.V.* 46.

that it is linguistically illegitimate or loose to say 'I hear a coach' (although Berkeley is sometimes inclined to take up this censorious attitude), but only that there is a different sense of the word 'hear' involved, as compared with the case where I say that I hear a noise. Another way of bringing out the distinction is this: suppose somebody thinks he hears a sound of a certain sort. Now, if he is wrong about this, if there is no sound to be heard, then he must have been subject to sensory illusion. But, on the other hand, if he thinks he hears a coach, and he turns out to be wrong about this, he *need* not have been subject to sensory illusion at all. For instance, it might be that other objects beside coaches made that noise, and, really hearing the noise, he was then misled into thinking there was a coach in the street. No doubt the distinction drawn here deserves much further analysis. One would like to ask, for instance, whether the distinction between what is and what is not immediately heard is a quite sharp one. Perhaps there are intermediate cases. But Berkeley seems to be pointing to a real distinction, and one well marked by saying that the noise is, and the coach is not, *immediately* heard.

The distinction drawn in the case of hearing seems to be equally applicable in the case of vision. As Berkeley says in the quotation above, the only things immediately seen are what he comprehensively describes as light, colours and figures. (What does Berkeley mean by the word 'light' here? Perhaps he is referring to such immediately seen qualities of surfaces as brightness and dullness. But the word is never explained.) It is only with respect to these qualities that visual illusion is possible. I can immediately see that the tomato is red, that it has a certain contour, that one part of its surface is darker than the other, but this is all that is immediately seen. If, after visual examination alone, I take what is immediately seen to be a tomato, but am wrong, visual illusion need not have occurred. The object may have all the visual qualities of a tomato, but not be one. But if, after visual inspection, I take the object to be purple, or square, then I have been subject to sensory illusion. Of course, the distinction between what is and is not immediately seen plays little part in ordinary talk, but it is important to painters, or to psychologists investigating the psycho-physics of vision.

If this be the distinction Berkeley has in mind (important objections to our interpretation will be considered shortly) we can begin to understand what he means by saying that distance is not immediately seen. What is immediately seen is an arrange-



ment of 'light and colours'; and, speaking off-hand, it would seem that this is a three-dimensional spatial arrangement. If I consider two immediately seen coloured shapes, it seems that I can sometimes *immediately* see, not only that one is to the left of, or above, the other, but also that it is more distant along the line of vision. Similarly, it seems that sometimes the bulge on the front of a tomato can be immediately seen. Depth seems to be immediately seen. Now, if we have understood Berkeley aright, he is asserting that, whatever the views of common sense, I cannot ever immediately see that an object is more distant than another; I cannot ever immediately see the bulge on the front of a tomato; that is, that depth or distance is never immediately seen. Seeing distances out from the eye, on this view, is always like hearing coaches, never like hearing sounds. *In the same sense that the ear is deaf to coaches, so the eye is blind to distance.* We can often tell the distance of objects from us 'at a glance', but this is like hearing a coach, not like hearing a sound. (At present, we are concerned only to understand, not to criticize, Berkeley's doctrine.)

If distance out from the eye is never immediately seen, what is it that we do immediately see, on Berkeley's view? The obvious answer is that what is immediately seen forms a two-dimensional spatial field, 'light and colours' arranged in a two-dimensional way, what is sometimes referred to as a 'flat-image'. I can see immediately that the man is to the left of the tree, and that the leaves of the tree are above its trunk (more strictly, all I immediately see are certain man-like, leaf-like and trunk-like coloured shapes arranged in this way), but I cannot immediately see that the tree-like shape is more, or less, distant than the man-like shape. I think this obvious answer is a quite correct statement of Berkeley's view, but it faces certain textual difficulties, which merit a brief discussion.

It does seem obvious that if we, as it were, 'remove depth' from the field of view we are left with an immediate object of sight that is two-dimensional, and this is, by itself, a strong argument for the view that Berkeley thought that what was immediately seen was such a two-dimensional arrangement of light and colours; but, strangely enough, Berkeley never says so explicitly, and some things he says even seem to contradict this view. In the first place, when discussing the proper objects of geometry, he says: 'I must confess that men are tempted to think that flat or plain figures are immediate objects of sight, though they acknowledge solids are not.'<sup>4</sup> Whereas the truth is 'plains

<sup>4</sup> N.T.V. 157.

are no more the immediate objects of sight than solids.<sup>5</sup> However, the contradiction here is apparent, not real. Berkeley's point here, it seems, is that flatness presupposes the existence of three dimensions, for it is only *surfaces* which can be said to be flat or not flat, and surfaces must be surfaces of *volumes*, and volumes are three-dimensional.<sup>6</sup> Now Berkeley denies that objects are immediately seen as three-dimensional, and so he must deny they are seen as flat. But this is by no means incompatible with saying that the immediate objects of sight are ordered in two dimensions, for a merely two-dimensional manifold is not *flat*, although it does have certain resemblances to a flat surface. Only if we confuse flatness with a two-dimensional manifold (a mistake often made) will any contradiction arise.

In the second place, however, Berkeley frequently says that the *only* immediate objects of sight are 'light and colours', no mention being made of any two-dimensional arrangement of these qualities. However I think we are entitled to regard this as simply an over-brief statement of his position, because at other times he gives a fuller account of the matter. In his *Theory of Vision Vindicated*, a pamphlet published after the *New Theory*, he says:

The proper, immediate object of vision is light, in all its modes and variations, various colours in kind, in degree, in quantity; some lively, others faint; more of some and less of others; various in their bounds or limits; *various in their order and situation*.<sup>7</sup>

In section 56 of the *Essay*, also, he speaks of 'the magnitude or extension of the visible object' as being immediately perceived by sight. Now both these quotations would make no sense unless Berkeley thought that the immediate objects of sight are dimensionally ordered: he denies that they are ordered in three dimensions, and so the natural interpretation is that they have a two-dimensional order.

In the third place, however, when discussing the case of a man born blind who is later made to see, Berkeley says that such a person would not judge the objects he saw to be high or low in relation to each other.<sup>8</sup> Yet one might think, if what was immediately seen was a two-dimensional spatial manifold, such a judgment should be possible. But all Berkeley means here, it seems, is that words like 'high' and 'low' (as also 'left' and

<sup>5</sup> *N.T.V.* 158.

<sup>6</sup> Cf. *N.T.V.* 155, and section 12 of this essay.

<sup>7</sup> *T.V.V.* 44. My italics.

<sup>8</sup> *N.T.V.* 95.

'right') get their primary application from *tactual* experience: he does not deny that there are *corresponding* relations in the objects immediately seen.<sup>9</sup> I conclude, therefore, that there is nothing in these textual points to overthrow the obvious inference that Berkeley thinks that what is immediately seen is a two-dimensional spatial arrangement of 'light and colours'.

At this point, however, our interpretation of Berkeley's doctrine must face a much more serious objection. We have assumed so far, and Berkeley's language regularly gives support to the view, that what are immediately perceived are actual qualities and relations of physical objects. The colours of objects, and some of their spatial relations, can be immediately seen. But when Berkeley speaks accurately, it may be pointed out, it turns out that he holds that only *ideas* or sense-impressions<sup>10</sup> can be immediately perceived. When he speaks strictly he is not prepared to say that the colour of a physical object is immediately seen; rather, all that is immediately seen is the colour that the object looks to me to have: only when we simply register our own sense-impressions do we get immediate perception. And so, it may be argued, what Berkeley wants to assert when he says that distance is not immediately seen is that our visual sense-impressions or ideas have a merely two-dimensional order, and not, as commonsense might think, a three-dimensional order.

This qualification of our previous conclusion is perfectly correct. Despite Berkeley's considerable looseness of language (and perhaps also looseness of thought) it is sense-impressions only which he thinks can be immediately perceived. Nevertheless, we hope to show, the qualification is not as important as it looks, and is largely irrelevant to the *New Theory of Vision*. Suppose we continue to use the phrase 'immediately perceived' in the way we have been explaining. Suppose, that is, that we take it that what is immediately perceived is always something physical. We can then express Berkeley's *considered* view of the matter by saying that what *he* takes to be immediately perceived is not what *is*, but what *seems* to be immediately perceived. For to talk of ideas or sense-impressions is to talk of what seems to be immediately perceived: to report our sense-impressions is to report what seem to be our immediate perceptions. Now many modern philosophers would deny (correctly I believe) that it makes sense to speak of *perceiving* sense-impressions at all. And

<sup>9</sup> Cf. *T.V.V.* 46.

<sup>10</sup> 'Ideas', for Berkeley includes images and sensations as well as sense-impressions, but this qualification does not matter for us here.

once this is granted it will equally make no sense to raise the question whether sense-impressions are or are not immediately perceived, for immediate perception is a species of perception. Berkeley, however, thought that sense-impressions were perceived (indeed this view is absolutely fundamental to the proof of the Immaterialist doctrine of the *Principles* and the *Three Dialogues*); and, holding this view, naturally went on to say that what were *immediately* perceived were not objects but rather sense-impressions or ideas.

But, as I hope to show, almost every conclusion that Berkeley comes to in the *New Theory of Vision* follows *simply* from the view that all that is immediately seen is a two-dimensional arrangement of light and colours. The view that this is an arrangement of *ideas* (appearances, or sense-impressions) adds nothing to his conclusions in the *New Theory*. (Apparent exceptions to this statement will be dealt with later.) Furthermore, the view that what is immediately perceived by sight is simply a two-dimensional arrangement is logically independent of the view that what are immediately perceived are mere sense-impressions. For, in the first place, if what was immediately perceived by sight was a three-dimensional manifold this would not prejudice the view that it was an idea or arrangement of ideas.<sup>11</sup> Contrariwise, the view that all that is ever immediately perceived by sight is a merely two-dimensional arrangement does nothing to prove that the immediate object of sight is an idea or sense-impression. It might still be a public object, visible for example to two persons who stood successively in the very same place (defined in non-visual terms) and whose eyes were in good order. Nor can it be argued that the immediate object of sight, if two-dimensional, must be mere appearance—because public objects are three-dimensional. For our immediate visual discriminations would be satisfactory as far as they go; they would simply fail to reveal *all* the characteristics of the objects. (In the same way, it seems logically possible that space has four or more dimensions, but that we are only aware of three. This would not prove that what we *were* aware of was simply an appearance, it would merely prove that we were aware only of certain parts or 'cross-sections' of reality.)

We shall have to return to this point, and may hope then to establish our contention more firmly. In the meanwhile our provisional conclusion is that Berkeley holds that what is immediately seen is simply a two-dimensional ordering of 'light and

<sup>11</sup> Berkeley admits this in the *Three Dialogues*, cf. Luce and Jessop, ii. 202.



colours'. It does not matter much whether we take it that what are immediately seen are certain qualities of public objects, or, as Berkeley himself holds, are ideas or sense-impressions.

### 3. IS IT TRUE THAT DISTANCE IS NOT IMMEDIATELY SEEN?

(i) After this rather complex discussion which, it is to be hoped, has elucidated, if not defined, what Berkeley means by saying distance is not immediately seen, we may consider what arguments he offers for this statement. Unfortunately, he gives us only one sentence in support of his position:

For distance being a line directed end-wise to the eye, it projects only one point in the fund of the eye, which point remains invariably the same, whether the distance be longer or shorter.<sup>12</sup>

Very often, it is for his premisses, and not for the working out of his premisses, that we find occasion to criticize a great philosopher. This is peculiarly true of Berkeley, both in the *New Theory* and the *Principles*. This view that distance is not immediately perceived, and this argument for it, he simply takes over uncritically from current optical theory.<sup>13</sup> The argument is in fact weak, and, as will appear at a later point, the fact that he has used it is an embarrassment to Berkeley in the course of his later reasonings.

Now, granting it to be true that there is only one point projected on the 'fund of the eye' (the retina), whatever the distance, why does this show we cannot immediately see the distance? Why does the fact that the projection on the retina is merely two-dimensional prove that we cannot see three dimensions? The argument seems to be valid only if we assume that the immediate object of sight is the fund of the eye. But this is obviously false. In the first place, when we see we never see the fund of an eye (although I suppose we might see it reflected in a mirror), rather it is objects beyond our eye that we see. In the second place, suppose it were true that the fund of the eye was the object immediately seen. Would we not need *another* eye to see the fund of the eye? After all, seeing requires eyes. But then, by parity of reasoning, all that would be immediately seen would be the fund of this second eye, which would have to be observed by a third eye, and so on indefinitely. The fact is that Berkeley's

<sup>12</sup> *N.T.V.* 2.

<sup>13</sup> Cf., e.g., W. Molyneux, *Dioptrics*, p. 113.

argument confuses the causes of vision, or the conditions under which we come to see, with the object seen. The fact that if seeing is to occur, we must have a two-dimensional picture projected on the retina does not prove that *what we see* must be that two-dimensional picture, any more than the fact that vision cannot occur unless our optic nerve is in working order proves that what we see is the optic nerve. The only reason that the former argument seems more plausible than the argument about the optic nerve is that, as a matter of contingent fact, what is formed on the retina is a two-dimensional simulacrum of the object seen, while the optic nerve is in no way like the objects seen. This physiological accident has profoundly confused both philosophers and scientists. Normally it has operated to reinforce the idea that perception was a matter of seeing *pictures* of the external world; Berkeley does not believe this, but he is still deceived by the *two-dimensional* nature of the simulacrum. And, as we shall see, accepting this argument as he does here, lands him in a great deal of trouble when he comes to discuss the 'knot' caused by the fact that the retinal image is *inverted*.

It may be suggested that the argument can be resurrected in a form which does not commit the fallacy of identifying what we see with the conditions under which we see it. Granted we do not see the retina, but, rather, external objects, still, it may be argued, we see objects only *under certain conditions*, for example if our eyes are shut we do not see at all. Again, only if our sense-organs are stimulated in a certain way will we be able to see objects. Now the stimulus for seeing is the formation of a merely two-dimensional picture on the retina, and so, it may be argued, it is clear that such a stimulus will give rise to a perception of two dimensions only. This argument, however, simply commits the same fallacy in a subtler form. Let us grant, for the sake of argument, that there must be some sort of point-to-point correspondence between the features of the object that are seen, and the occurrences that take place in the eye as a result of stimulation by the object when we see it; yet there is no need for these happenings to be *replicas* of what is seen. There may very well be other happenings in the eye, correlated with the distance of the object, which are the preconditions of seeing depth.<sup>14</sup> In order that we may hear sounds, there do not have

<sup>14</sup> Cf. J. J. Gibson, *The Perception of the Visual World* (1950), p. 8. 'The qualities of solidity and *depth* . . . do not have any replica in the two-dimensional retinal image but they may very well prove to have correlates there.' (My italics.)

to be tiny gramophones in our ears, reproducing the external sounds, there need only be appropriate stimuli, correlated with different sounds. It appears then that Berkeley's argument does nothing to prove his conclusion.

(ii) But although Berkeley's argument is invalid, it may still be that his conclusion can be proved by other means. It might be argued that in order to estimate a distance by eye we require that the two end-points of the distance be visible. Thus, in order to make a visual estimate of the distance between two trees, we shall have to see both the trees. Now consider the case where I want to estimate the distance between *myself* and one of the trees, by eye. Since I cannot see my eye, but only the tree, I have not got the two visible points required. Hence, it may be argued, I can never see the distance out from my eye to other objects, and so I can never see the distance of objects immediately.

But whatever this argument proves, it does not prove that the visual field is two-dimensional only. Consider, for instance, the case where we are looking at three sticks joined together at the mid-point of each, so that each is at right-angles to the other two. Now here we can see all six end-points, and the point of intersection, and so, *for anything this argument may show*, we can immediately see that the sticks lie along three dimensions. The only problem this argument creates is why we can see the sticks, and everything else in our visual field, as oriented with respect to *us*. But this problem is really irrelevant to the question in hand.<sup>15</sup>

(iii) Suppose one approaches an object whose physical dimensions remain constant during that time. Nevertheless, *in respect of one's field of view*, its size increases. This might be interpreted as evidence for the view that what is immediately seen is a two-dimensional arrangement. For let us suppose that three-dimensional physical objects are projected on a two-dimensional vertical screen, horizontal lines being drawn from points on the

<sup>15</sup> Nevertheless, it is a problem of some intrinsic interest. The solution seems to be that, although we do not see our eyes, we do see, on the edges of our visual field, portions of our *face* (eyebrows, nose, etc.). They are a *constant* factor in all vision, and are near, and in a constant spatial relation to, our eyes. Hence it seems likely that they are the 'here', the 'point of view', in terms of which the objects in our field of view are oriented. We see things in relation to our face, not in relation to our eyes, but since we know the relation of face to eyes it is easy to estimate distances visually as if from our eyes. The rest of our body may also be used in the same sort of way. If our eyes protruded so that no part of our body was in our field of view we would not so easily be able to orient objects seen with respect to ourselves. Cf. Gibson, *op. cit.*, ch. 13 for an excellent discussion of this point.

object at right-angles to the screen. Now it is clear that, as the object approaches, its projection on the screen increases, that is, it produces the very effect mentioned above. Hence, we can explain the 'increase of size in respect of the field of view' of an object of constant physical size which is moving towards us, by saying that all we immediately perceive is a two-dimensional projection of physical objects.

But although such an hypothesis could explain this 'increase of visual size' consequent upon our approaching an object, this constitutes only a *verification*, not a *proof*, of the hypothesis. It is certainly not the only way to explain this phenomenon, and in any case the hypothesis faces difficulties of its own. How can we ever get any independent evidence of the existence of these three-dimensional objects whose two-dimensional projectives we are alleged to observe? By hypothesis, they are not immediately seen. We cannot therefore accept this argument as a proof that what is immediately seen is two-dimensional only. In any case, the so-called 'increase of visual size' is perfectly compatible with saying that the field of view is three-dimensional. For we could say then that what increases is not the object's apparent size, but the proportion it fills of our field of view, as measured, for example, by the angles it subtends at our eyes or face, or by the number and size of the objects it obscures from view. And such an 'increase' is geometrically necessary as the object draws nearer; but does not imply that the visual field is two-dimensional.<sup>16</sup>

(iv) If two objects lie along the same straight line as our eye, we cannot see the more distant one. But if we abstract from depth, and take the field of view in a two-dimensional way, there can be no such interference. Now this fact that the near cuts off the far might be thought to show that distance can never be seen immediately at all.

But all that this argument shows is that we can only see how distant a thing is if the medium between the thing and our eye is transparent. It does not show that distance can never be immediately perceived *at all*. It does not show that, if there are two trees, not in the same straight line as the eye, and if the medium between the eye and both trees is transparent, we cannot see that one of the trees is further away than the other. In any case this phenomenon, that the near cuts off the far, only occurs

<sup>16</sup> Cf. the paper by Prof. H. H. Price in *Contemporary British Philosophy* (Third Series), ed. H. D. Lewis, for a development of this point. The same sort of suggestion is made, much more briefly, by John Anderson. Cf. 'The Knower and the Known', *Proc. Arist. Soc.* (New Series, 1926-7), xxvii. 74-7.



because, in general, light travels in straight lines. If it did not, we might be able to 'see round corners', that is, see behind what we now call opaque objects. (It may be objected here that the object would not seem to be where it was, but would seem to lie along the last direction of the light-waves as they enter the eye, so that we still could not see an object as being behind another 'opaque' object. But it appears to be only a contingent fact that we see objects subject to these limitations. It seems logically possible that the light-waves should curve round an 'opaque' object, yet the object seem to us to be where it really was, behind the 'opaque' object.)

(v) There is yet another argument Berkeley might have brought in support of his contention that distance is not immediately seen. It might be said that, if it be contended that what is immediately seen is three-dimensional, it would have to be admitted that when we perceive the colour of things we perceive only the colour of their *surfaces*. Now although the notion of a surface presupposes that it is the surface of a three-dimensional thing, surfaces themselves, nevertheless, are two-dimensional only. This admission about colour might be turned then, in the following way, into a *reductio ad absurdum* of the view that what is immediately seen is a three-dimensional arrangement.

Suppose, for the sake of argument, that the field of view is three-dimensional. This field will contain various objects, at different distances from the observer, but all that is immediately seen of the objects is the colour etc., of the *surfaces* of these objects. We cannot see even one ten-thousandth of an inch below the surface: for all that our immediate visual perceptions can tell us the colour of the object at that depth may be quite different. The thing we immediately see, then, is *mere* surface. But, we might argue now, there can be no objects of perception which are mere surfaces. For a surface is simply the limit or boundary of a volume: it has no existence independently of that volume. Yet, by hypothesis, what we perceive are not colour-volumes, but colour-surfaces. The same point may be brought out in the following way: if what we immediately perceive are simply colour-surfaces, then is it not at least logically possible that the object is *differently* coloured immediately behind the surface, or even that there is no object at all behind the surface? But both these alternatives are certainly absurd. They can only seem possibilities if we think of a surface as a very thin *film* of substance, which could then cover an object, or even exist by itself. But a surface is not a thin film—films themselves are three-

dimensional substances which *have* surfaces, that is, they have limits. A surface has no thickness at all, and so the object 'behind' it would have *its* surface at the same place as the first surface—so the object's surface would have two different colours. And if there were no object 'behind' the surface, the surface would not exist. All this, it may be argued, constitutes a *reductio ad absurdum* of the view that what we perceive are coloured surfaces, yet it is the view we must adopt if we hold that the field of view is three-dimensional. The paradox vanishes if we assume that what is immediately seen is a two-dimensional manifold, for since the two-dimensional manifold is not a *surface*, it is quite capable of independent existence.

The argument is ingenious, it certainly proves something, and as we shall see there are special reasons why it might appeal to Berkeley; but it fails to show that the visual field cannot be three-dimensional. What I think it does show is that mere colour-surfaces cannot exist in abstraction from the volumes that they are the surfaces *of*. Only colour-volumes can exist. If a surface really is coloured blue, then the object that is so coloured must be blue to some *depth*, however small. It cannot be blue at the surface, and no further. But we cannot argue from this that all we perceive of the object may not simply be the surface of the three-dimensional object. Such a perception will simply be *abstract* or *indeterminate*, and this is a regular feature of all our perceptions. I may see that a piece of cloth is light blue, or that it is roughly as large as another piece of cloth. Now the piece of cloth cannot be *merely* light blue in colour: it must of logical necessity be some definite shade of light blue. The piece of cloth cannot be *roughly* as large as the other: it must of logical necessity bear a definite relation to the other piece in respect of size. Yet our perceptions allow us to go no further than these abstract indeterminate judgments (and not simply through lack of words, or lack of 'close attention to our perceptions'—the perceptions themselves are indeterminate). In the same way, may we not argue that all that we perceive of the colours of three-dimensional objects are the colours of their surfaces, recognizing that the object must be coloured in this way *to some depth*, while allowing that our perceptions invariably leave this depth completely indeterminate?<sup>17</sup> Hence it has not been proved that what is seen is merely two-dimensional.

<sup>17</sup> In fairness to Berkeley it must be pointed out that he would not have accepted this reply, for he thinks that all our sense-impressions and mental images are completely determinate. Cf. the 'Introduction' to the *Principles*.

In any case, it is worth noticing that it has not been proved that all our perception of coloured objects is a perception of colour-surfaces alone. If I look at a block of transparent glass or other material, it seems, *prima facie*, that I immediately see a colour-volume. If the material is amber, and there are two insects embalmed in it, it seems that I might immediately *see* that one insect-shape is at a greater depth than the other, that is, that I can perceive three dimensions of colour. At any rate, in default of some argument that proves that what we immediately see is two-dimensional only, this seems to be what is immediately seen.

(vi) We have now examined five invalid arguments for asserting that what is immediately seen is a merely two-dimensional continuum. However, there is one consideration which does seem to tell a little in Berkeley's favour. There is a peculiarity about the visual perception of distance which does lend some colour to, though it certainly fails to prove, the doctrine that the visual field is two-dimensional. Many of our visual discriminations of near and far are rather uncertain (an uncertainty increased if we shut one eye). But if we abstract from depth and take the field of view in a two-dimensional way, then it is more difficult to fall into error about the relative positions of the objects seen. We take advantage of this in estimating distance by the eye. The best way to estimate the distance between two objects is to get them sideways-on to the line of vision; but if the two objects and our eyes come close to making a straight line it may be rather difficult to estimate their distance. This phenomenon serves to generate the suspicion that distance is not immediately seen, but seen only in the sort of way that we hear a coach outside in the street. So perhaps we cannot dismiss Berkeley's view, even though attempted proofs of it fail. Let us, therefore, provisionally accept Berkeley's view, and see what *consequences* it leads to. It is the thesis of this essay that Berkeley works out the consequences of his view, for the most part, with great subtlety and accuracy, but that his *conclusions* can be shown to be unacceptable, or, at the very least, highly implausible. If his conclusions are false, but his argument correct, we may conclude that his starting-point was incorrect. In the meanwhile, then, we will continue to follow Berkeley's argument.

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I think he is quite clearly wrong here, however, but will defer any further discussion of this view of his until we come to look at his doctrine of the 'minimum visibile', with which it is closely bound up.

#### 4. HOW IS DISTANCE ESTIMATED BY SIGHT? (SECTIONS 3-40)

If it be granted for the sake of argument that distance is not immediately seen, then the question arises 'How do we estimate distance by sight?' After all, it can hardly be denied that (a) there are objects which are at a distance from us; (b) we regularly use our eyes to estimate the distances of objects; we can tell the distances of things, at any rate in a rough-and-ready way, 'at a glance'. It is this problem that Berkeley now sets himself to discuss.

He begins by setting out the accepted doctrine of the way this is done—for, as already mentioned, contemporary opinion agreed with Berkeley in holding that distance is not immediately seen (sections 3-7).

- (i) . . . when an object is placed at so near a distance as that the interval between the eyes bears any sensible proportion to it, the opinion of speculative men is that the two optic axes (the fancy that we see only with one eye at once being exploded) concurring at the object do there make an angle, by means of which, according as it is greater or lesser, the object is perceived to be nearer or farther off.<sup>18</sup>
- (ii) There is another way mentioned by optic writers, whereby they will have us judge of those distances, in respect of which the breadth of the pupil hath any sensible bigness: And that is the greater or lesser divergency of the rays, which issuing from the visible point do fall on the pupil, that point being judged nearest which is seen by most diverging rays, and that remoter which is seen by less diverging rays . . . And after this manner it is said we perceive distance when we look only with one eye.<sup>19</sup>
- (iii) I find it also acknowledged that the estimate we make of the distance of objects considerably remote is rather an act of judgement grounded on experience than of sense. For example, when I perceive a great number of intermediate objects, such as houses, fields, rivers, and the like, which I have experienced to take up a considerable space, I thence form a judgement that the object I see beyond them is at a great distance.<sup>20</sup> Again, when an object appears faint and small, which at a near distance I have experienced

<sup>18</sup> sec. 4.

<sup>19</sup> sec. 6.

<sup>20</sup> There is a little inaccuracy here. How can I form such a judgment unless I first discover that the object judged to be at a great distance is *beyond* the 'intermediate' objects? But, by hypothesis, this is not immediately seen. Cf. *T.V.V.* 63.



to make a vigorous and large appearance, I instantly conclude it to be far off . . .<sup>21</sup>

Against these methods of judging distance by sight, Berkeley sets another list (sections 16-28):

- (i) . . . when we look at a near object with both eyes, according as it approaches or recedes from us, we alter the disposition of our eyes, by lessening or widening the interval between the pupils. This disposition or turn of the eyes is attended with a sensation, which seems to me to be that which in this case brings the idea of greater or lesser distance into the mind.<sup>22</sup>
- (ii) An object placed at a certain distance from the eye, to which the breadth of the pupil bears a considerable proportion, being made to approach, is seen more confusedly: And the nearer it is brought the more confused appearance it makes.<sup>23</sup>
- (iii) An object being placed at the distance above specified, and brought nearer to the eye, we may nevertheless prevent, at least for some time, the appearances growing more confused, by straining the eye. In which case that sensation supplies the place of confused vision in aiding the mind to judge of the distance of the object; it being esteemed so much the nearer by how much the effort or straining of the eye in order to distinct vision is greater.<sup>24</sup>
- (iv) . . . the particular number, size, and kind, etc., of the things seen.<sup>25</sup>

It will be seen that (iv) in Berkeley's list is identical with (iii) in the previous list, but that Berkeley rejects the two 'geometrical' methods of estimating distance.

Neither Berkeley, nor his opponents, think of this judging distance by the eye as a self-conscious process. Presented with the appropriate 'cue', we immediately pass to thinking that the object is at a certain distance, just as on hearing a certain sort of noise we immediately think that there is a coach outside, or, to use Berkeley's favourite example, on hearing certain words we immediately think of the meaning customarily connected with these marks or noises, whether we will or no. It is a case of what Professor Price, in his book *Thinking and Experience*, calls 'sign-cognition'. And the reason we make this immediate passage from seeing a certain sign to thinking that there is an object at a certain distance, in the case of *Berkeley's* cues, at any rate, need be no more than previous *experience* of the conjunction of

<sup>21</sup> sec. 3.

<sup>22</sup> sec. 16.

<sup>23</sup> sec. 21.

<sup>24</sup> sec. 27.

<sup>25</sup> sec. 28.

this sign with objects at that distance. (Berkeley, as a matter of fact, anticipates Hume's views about the way belief can be brought about on the basis of association of ideas, although he does not work out the matter with anything like the same thoroughness, cf. *T.V.V.* 93.) Certain noises are used with a certain meaning by ourselves and others, and on hearing the noise again we cannot help associating that meaning with the words. It is the same with judgments of distance. Focusing our eyes on objects which as a matter of fact are at a certain distance, we feel certain sensations. Whether we will or no, and without reflecting on past experience, we judge the object to be at a certain distance. But such a judgment is opposed to the *immediate* vision we have of left and right, or up and down, that is, of a two-dimensional manifold.

But to return to the two rival lists of ways of judging distance by the eye. With the minutiae of the dispute this essay is not concerned; they are questions for psychologists studying vision. Much research has been done on the question, and Berkeley's *New Theory* is an early classic on the subject. (Incidentally, even if we hold that distance is immediately seen this does not make the dispute unimportant, for there may still be 'cues' which *assist* estimation of distance by the eye. Cues will be especially important if it is the case that the distances that we can immediately see are only short. And it does seem that on any view our immediate perception of depth is inferior to our other immediate visual discriminations of spatial relations.) But, fortunately, the important point in the dispute, from our point of view, can be brought out without having to go into these questions. The important difference between Berkeley's list of cues and the methods of estimating distance that current theory had upheld is that, whereas there is a *necessary* connection between the angle our eyes make at the object, or the divergency of rays of light falling on the pupil, and the distance of the object,<sup>26</sup> in the case of sensations in the muscles in the eye, or the seeing of a thing confusedly, there is only a *contingent* connection between these phenomena, and the distance of the object seen. This means that if we estimated distance by the eye by means of lines and angles we would be able to discover the distances of objects independently of experience. If we knew the distance between our eyes, and the angle that straight lines from the eyes make at the object, we would then know what the

<sup>26</sup> Assuming that space is Euclidean, which it did not occur to Berkeley, writing before the discovery of non-Euclidean geometries, to doubt.

distance of the object *must* be (or at any rate it could be worked out). No antecedent experience or subsequent confirmation would be necessary. But the case is quite otherwise with the method that Berkeley thinks we use when we estimate distance by the eye. Here the connection between the signs of distance and the actual distance of the object has to be discovered by experience, in the same way that we discover that smoke is a sign of fire. This is the point Berkeley is really anxious to insist upon—the signs by which we judge of distance by the eye are *not* necessarily connected with the distance of the object. His list of signs is chosen with this in mind, and they could very well be altered without doing any real damage to his argument, as long as this proviso was kept in mind. And, as we shall see, he has the very best of reasons for maintaining that the signs by which we discover distance by the eye have no necessary connection with the distance of the object.

What, then, are the arguments that Berkeley brings against the received view that we can judge distance by the eye by a kind of natural geometry? There appear to be four different arguments on which Berkeley relies.<sup>27</sup> I shall maintain that three of these arguments are insufficient to prove his point, but that the fourth argument is absolutely conclusive.

(i) The first argument we shall consider is a technical one, drawn from optics. Berkeley discusses it at length, and with great acuteness, for twelve sections (29-40), but from our point of view it is not of great importance. He argues that a certain rather complex optical phenomenon, the 'Barrovian case', which is inexplicable on the supposition that we judge of distance by lines and angles, can be explained provided we realize that, *under normal circumstance*, a very near object is seen confusedly (his second 'cue'), and that this confusion is used in estimating distance. (In the 'Barrovian case' the greater confusion occurs when the object is most distant, contrary to normal experience, so we think the distant object is near.) However, Berkeley's argument, whatever its importance for optics, seems to prove only that the confusedness of vision is a more important 'cue' for distance than is an estimation based on the angle the eyes make at an object. It does not conclusively prove what is Berkeley's great purpose to prove, that estimations of distance by means of lines and angles play absolutely no part in the estimation of distances by the eye.

(ii) There seems to be some trace of a second, very weak,

<sup>27</sup> Cf. secs. 12-15 and 29-40.

argument according to which we cannot estimate distances by the eye with the aid of lines and angles because there are no physical strings or wires connecting our eyes to the objects on which they are focused.<sup>28</sup> If Berkeley did intend such an argument it is obviously a very unsatisfactory one. It is true that if such lines or wires did exist they might make it a good deal easier to judge the angle that the eyes made at a certain object, but even without them it would seem possible to make such judgments, even if they would be less accurate. I seem to be able to *see*, without using pieces of string, that my eyes make an angle of roughly thirty degrees with the ink-bottle in front of me.<sup>29</sup>

(iii) The third argument we shall discuss is the one on which Berkeley seems principally to rely; nevertheless we shall see that it is insufficient. This is the argument that these lines and angles are never thought of 'by those unskillful in optics'.

I appeal to any one's experience whether upon sight of an object he computes its distance by the bigness of the angle made by the meeting of the two optic axes? Or whether he ever thinks of the greater or lesser divergency of the rays, which arrive from any point to his pupil? Everyone is himself the best judge of what he perceives, and what not. In vain shall any man tell me that I perceive certain lines and angles which introduce into my mind the various ideas of distance, so long as I myself am conscious of no such thing.<sup>30</sup>

The first objection to this argument is *ad hominem*. If it were allowed, it would seem to bear equally hard on the methods which *Berkeley* thinks we use to judge distance by the eye. Appealing to anybody's experience, when making visual judgments of distance, do we ever think of or notice the increasing muscular strain in the eye as the seen object draws nearer, or the degree of confusedness with which we see the objects? Surely we do not; we just look at the object, and then we say how far away it is. The 'unskillful in optics' are as unaware of the phenomena Berkeley points to as they are of the imaginary lines and angles. It may be replied, on Berkeley's behalf, that on occasion we do become aware of certain feelings in the eye-muscles as the object draws nearer, or we become aware of the

<sup>28</sup> Cf. sec. 12 and especially sec. 14, 'those lines and angles have no real existence in nature, being only an hypothesis framed by the mathematicians . . .'

<sup>29</sup> Surprisingly enough, Mr G. A. Warnock seems to endorse this argument in his *Pelican* book on Berkeley, cf. pp. 25-6.

<sup>30</sup> sec. 12.



increasing confusedness of vision, and that in any case we could become aware of them if our attention were directed to them. But equally, for all *this* argument can show, on occasion we become aware that the angle made by the optic axes at the object is getting larger as the object approaches, and we always could become aware of this if our attention were directed to it. Admittedly, our judgments will be pretty rough-and-ready, they will fall short of geometrical accuracy, but nobody ever supposed (except perhaps Berkeley in the heat of the argument) that this judging by lines and angles is done with the precision of a surveyor. Judgment of distance by the eye is rough-and-ready, and rough-and-ready geometry might be a possible explanation of the way we judge distance by the eye. And if the reasons given above by Berkeley bear against this explanation, they seem to bear equally hard against his own.

But secondly (granting for the sake of argument that distance is not immediately seen, but that it is visually perceived *by signs*) it does not seem to be necessary for a satisfactory account of the way we judge distance by the eye that the perceiver be able to give any account of the way that he is able to make this judgment. All that seems to be necessary is that the signs by which he judges distance be perceived by sight, or else, like muscular sensations in the eye, accompany sight, and be felt or be perceived by some other sense. They need not be in any way the focus of attention, they can be quite peripheral, in the same sort of way that one's nose is only perceived by sight in a peripheral manner. Nor need we be aware that it is by means of this sign that we are able to judge distance. We need only an experienced correlation between the sign and the distance of the object. I may look at a man, and I may judge correctly that he is angry, but I may not be able to say just why I know he is angry. But granted that it was *by looking at him*, or by some perception or feeling that is connected with the looking, that I discovered that he was angry then it must be that I was going on something I saw or some perception or feeling resulting from the seeing. It is enough that the sign was perceived or felt, that as a matter of fact it is a reliable mark of anger, and that my perception or feeling caused me to judge the man was angry. But I need not know the cause of my judgment. In the same way, I may look at an object, and I may judge that it is at a certain distance, although I cannot immediately perceive this. Now granted that it was *by looking* I discovered the distance then it must be that I was going on *something* I saw, or some perceived

or felt accompaniment of the seeing. But it is not necessary that I be able to pick out what it was that enabled me to judge the distance.

So, it seems, it is no real objection to the view that distance is not immediately seen, but is judged of by lines and angles, to say that we are not *conscious* of doing any such thing. All that is necessary is that the lines and angles be observed (however unselfconsciously) in a rough-and-ready way. We might, then, for all this argument shows, make judgments of distance by means of them. Berkeley could have tried to argue that judging distance by 'lines and angles' does not meet even these specifications, by pointing out that one end of the lines (the retina) is never seen. But as it was pointed out above we do see enough of our face to use this instead of the eyes themselves when estimating angles at the object.

(iv) But Berkeley does not have to rely on this dubious argument (though, curiously enough, he gives it the greatest prominence). For, as he realizes, the view that distance cannot be immediately seen really rules out the possibility of judging distance by lines and angles. For these lines are themselves *lines that run out from the eye*, and so, *if distance out from the eye cannot be perceived, these lines themselves cannot be perceived by sight.* (Indeed, since on his view vision yields us immediately nothing but a two-dimensional order, there is no reason to think there could be any such lines; for there is no reason to think that the objects perceived by sight are anything but two-dimensional objects.) In fact, unlike the contemporary opticians, Berkeley is prepared to take his premiss, that distance is not immediately seen, *seriously*. He sees, quite correctly, that it rules out the possibility of postulating lines out from the eye by which we might judge distance. It is a mark of Berkeley's greatness that he was prepared to follow out the consequences of his assumptions in this rigorous way, and if the consequences he is led to are unacceptable, his work at least provides a falsification of his assumptions. If visual depth is never an object of immediate perception, there can be nothing observed by sight that has anything but a contingent connection with distance. Earlier theorists, such as Molyneux, were inconsistently trying to have it both ways. But if we really hold that distance is not immediately seen, the 'geometrical' methods of estimating distance by the eye must be rejected, because they imply that distance is immediately seen. This simple consideration is enough.

## II

### *The Central Doctrines of the 'Essay'*

(Sections 41-51)

#### 5. BERKELEY'S CONCLUSIONS

In the first forty sections Berkeley has asserted that distance is never immediately seen, has offered argument for this view, examined the methods by which current theory held that distance is estimated by the eye, and rejected them in favour of 'cues' which have a merely contingent connection with the distance of the objects seen. Up to now we have been concerned solely with questions about seeing. But now, in sections 41 to 51, the concluding sections of the first division of the *New Theory*, he proceeds to draw very sweeping conclusions *about the nature of the physical world*. These conclusions, which boil down to two, are, I think, the central doctrines of the *Essay*, and are of the greatest philosophical importance. It will be argued that one is not a legitimate deduction from his premisses, but that the other is inevitable once we accept the view that distance is not immediately seen.

He begins by saying:

From what hath been premised it is a manifest consequence that a man born blind, being made to see, would at first have no idea of distance by sight; the sun and stars, the remotest objects as well as the nearer, would all seem to be in his eye, or rather in his mind. The objects intromitted by sight would seem to him (as in truth they are) no other than a new set of thoughts or sensations, each whereof is as near to him as the perceptions of pain and pleasure, or the most inward passions of his soul. For our judging objects perceived by sight to be at any distance, or without the mind, is . . . intirely the effect of experience, which one in those circumstances could not yet have attained to.<sup>1</sup>

Here there seem to be two closely intertwined points being made; (i) the immediate objects of vision are *in the mind*; (ii) to the

<sup>1</sup> sec. 41.



unsophisticated eye there is nothing to show that the immediate objects of vision are at a distance, or are connected with anything that is at a distance. The former of these is the *first* of the two central doctrines of the *Essay*. We hope to show it is quite unjustified by the previous argument, but will defer consideration of it until the next section of this essay. The second point leads on to the second central doctrine of the *Essay*, as we shall try to show now.

Berkeley first tries to reinforce this second point by some new considerations:

. . . suppose I perceive by sight the faint and obscure idea of something which I doubt whether it be a man, or a tree, or a tower, but judge it to be at the distance of about a mile. It is plain I cannot mean that what I see is a mile off, or that it is an image or likeness of anything which is a mile off, since that every step I take towards it the appearance alters, and from being obscure, small, and faint, grows clear, large, and vigorous. And when I come to the mile's end, that which I saw first is quite lost, neither do I find anything in the likeness of it.<sup>2</sup>

But now Berkeley is face to face with a serious problem, a problem that previous writers had simply evaded. We live in a three-dimensional world, a world of physical objects in space, some near to us, others farther off. So much, it would seem, nobody could deny, whatever *analysis* they might give of statements about the distances of things. But if vision gives us immediate access only to a two-dimensional arrangement, as Berkeley and others thought, how do we come to know that there *are* any objects at a distance from us at all, let alone discover what particular distance they are at? Berkeley, consistently with his premisses, denies that anything we observe by the use of our eyes has a necessary connection with distance; that is, for him there can be no question of simply deducing the distance of objects by reference to what is given in vision. How, then, do we estimate distance by the eye? It must be, as he sees, by certain *signs* which have only a non-deductive connection with distance—for instance, a correlation between the distance of the object and the amount of strain felt in our eye-muscles when we 'bring the object into focus'. But how can the observation of these signs justify a judgment that the object is at a certain distance unless we have previously observed the distances of objects independently of the visual signs, which we have

then found to be reliable signs of distance? We can judge there is fire when we see smoke, only because in the past we have experienced the conjunction of fire and smoke. Without this independent observation of distances we should never be led to postulate the existence of objects that are at a distance from us. We should think reality was two-dimensional only. Where, then, does this original experience of distance come from? On Berkeley's view it cannot possibly come from anything we *see*. Why is it not the notion of three-dimensional spatial objects as much a mystery to us as the notion of four-dimensional objects certainly is?

Berkeley's answer has often been criticized, but, if we look at it against the background sketched in the previous paragraph, we shall see that it is inevitable. If the answer has weaknesses, that is a criticism, not of his argument, but of his original assumption that distance is never immediately seen. The distance of objects, along with their three-dimensional nature, is perceived, he says, not by sight, but rather by touch, using touch in the large sense in which it includes kinaesthetic experience. What is immediately perceived by sight is simply a reliable sign of what we do or might experience by means of the sense of touch.

. . . the truth of the matter stands thus: Having of a long time experienced certain ideas, perceivable by touch, as distance, tangible figure, and solidity, to have been connected with certain ideas of sight, I do upon perceiving these ideas of sight forthwith conclude what tangible ideas are, by the wonted ordinary course of Nature like to follow.<sup>3</sup>

A man who says he sees something at a distance means only this:

. . . what he sees *only suggests to his understanding* that after having passed a certain distance, to be measured by the motion of his body, *which is perceivable by touch*, he shall come to perceive such and such tangible ideas which have been usually connected with such and such visible ideas.<sup>4</sup>

This brings us to the second central contention of the *New Theory*, a doctrine which might be referred to as the doctrine of the numerical difference of the immediate objects of sight and touch.<sup>5</sup> We regularly speak of seeing and touching the same thing, and Berkeley admits that this usage is not without justification, but strictly speaking, it is inaccurate on his view.

<sup>3</sup> sec. 45.

<sup>4</sup> Ibid. My italics.

<sup>5</sup> I am not suggesting that Berkeley thinks the immediate objects of sight and touch are *only* numerically different. Cf. section 11 of this essay.

The two-dimensional immediate objects of sight, and the three-dimensional objects of touch, are numerically distinct. But these two distinct things are in 'the wonted ordinary course of nature' found regularly associated with each other; when I see something round I can also feel something round, when I see something square I can also feel something square. This close association, or constant conjunction as Hume would have put it, leads to the strictly inaccurate usage whereby we talk of seeing and touching the very same thing.<sup>6</sup>

It is this close association, also, that brings about the mistake we tend to fall into of thinking that depth is immediately perceived. When we hear the words of a familiar language we are immediately led to think of their meaning. Indeed, having once heard the words, it is not in our power to forbear thinking of the meaning. In the same way, the close correlation that exists between objects of sight and objects of touch, a correlation that we begin to learn as soon as we start to see and feel, ensures that vision will suggest the notion of distance to us whether we will or no; just as in the case of language, also, we are more interested in what is *suggested* to us, than in what is immediately perceived. We often remember a man's thought without remembering the words he used; we may hardly notice the words but, as it were, pass directly to the meaning. In the same way we are usually more interested in physical objects, which are more closely connected with our pain and pleasure, and the conduct of life generally, than the objects *immediately* seen. This makes it easy to believe that distance is immediately given in vision.<sup>7</sup>

After this preliminary account of Berkeley's argument in sections 41 to 51 we shall go on to examine in more detail what we have said are his two main contentions: (i) that what is immediately seen is 'in the mind', and (ii) that the immediate objects of sight and touch are numerically distinct.

#### 6. THE 'NEW THEORY OF VISION' AND 'IMMATERIALISM OF THE EYE'

It is one of the most cherished legends about the *New Theory of Vision* that it is a sort of half-way house to the fully developed Immaterialism of the *Principles of Human Knowledge*. In this section I shall try to show just how little foundation there is for this claim *in the argument* of the *New Theory*.

In fairness to those who have held this interpretation, it must

be admitted that this is the view that Berkeley himself took of his earlier work. This is made perfectly clear in two sections of the *Principles*.

For that we should in truth see external space, and bodies actually existing in it, some nearer, others farther off, seems to carry with it some opposition to what hath been said, of their existing no where without the mind. The consideration of this difficulty it was, that gave birth to my *Essay towards a new Theory of Vision* . . .<sup>8</sup>

Here Berkeley says, rather cautiously perhaps—note the word 'seems'—that the immediate perception of distance by sight contradicts the view that the being of physical things lies in their being perceived. Contrariwise, in the *New Theory*, as we saw, he asserts that the fact that distance is *not* immediately seen shows that the immediate objects of sight *are* in the mind.<sup>9</sup>

At the same time he says that his treatment of the immediate objects of touch in the *New Theory of Vision* was an *ad hoc* concession to materialism:

That the proper objects of sight neither exist without the mind, nor are images of external things, was shewn even in that treatise. Though throughout the same, the contrary be supposed true of tangible objects: not that to suppose that vulgar error, was necessary for establishing the notion therein laid down; but because it was beside my purpose to examine and refute it in a discourse concerning *vision*. So that in strict truth the ideas of sight, when we apprehend by them distance and things placed at a distance, do not suggest or mark out to us things actually existing at a distance, but only admonish us what ideas of touch will be imprinted in our minds at such and such distances of time, and in consequence of such and such actions.<sup>10</sup>

We shall try to show, however, that whatever Berkeley's opinion on the matter, the view that the immediate objects of sight are two-dimensionally ordered *only*, and the doctrine that the objects of sense-perception do not exist without the mind, stand in the logical relation of indifference. The truth or falsity of the one has no bearing on either the truth or falsity of the other. In the second place, it will be shown that the doctrine of the objects of touch put forward in the *New Theory of Vision* stands in no necessary opposition to (though equally it does not imply) an 'Immaterialism of touch'. By getting this mistake of Berkeley's out of the way we shall at least be free to

<sup>8</sup> sec. 43.

<sup>9</sup> Cf. sec. 41 and elsewhere.

<sup>10</sup> sec. 44.



look at the real implications of the argument of the *New Theory*. The rest of this section, therefore, is of negative value only, for it is aimed solely at the correction of this old error.

(i) In the first place, supposing, for the sake of argument, that what is immediately seen is a three-dimensional order, this stands in no necessary conflict with Immaterialism. Berkeley admits this in a passage in the *Three Dialogues*:

*Philonous*: But allowing that distance was truly and immediately perceived by the mind, yet it would not thence follow that it existed out of the mind. For whatever is immediately perceived is an idea: and can any *idea* exist out of the mind?<sup>11</sup>

In other words, the real basis of the proof that what is immediately perceived is 'in the mind' is the controversial view that what is immediately perceived is an *appearance* (idea). The argument is not affected if it is a three-dimensional appearance.

(ii) In the second place, supposing for the sake of argument that what is immediately seen is a two-dimensionally ordered manifold; that is, supposing that distance is not immediately seen, this does nothing to show that the immediate objects of vision are 'in the mind'. By saying that the objects of sense do not exist except 'in the mind' Berkeley means only this, that they cannot exist independently of being perceived. Now there seems to be no reason at all why a two-dimensional manifold should not exist independently of its perceivers as much as a three-dimensional one. There might, perhaps, be arguments to show that *neither* could exist independently of being perceived (the sort of arguments, for example, that Berkeley advances in the 'First Dialogue'), but these arguments would have no special application to the former. Berkeley, as is abundantly clear in the text, is misled in the following way. What he has shown in the *Essay*, if he has shown it, is that, because distance cannot be immediately seen, *it makes no sense* to ask how far away from us the immediate objects of sight are. The notion of distance has no application to them. But he seems to pass from this conclusion to thinking illegitimately that the immediate objects of sight are at no distance from us in the straightforward spatial sense in which my brain is at no distance from my skull because it is contained in my skull; that is, he thinks of the immediate objects of sight as actually being inside us. Then, by a further illegitimate step, he goes from thinking of the immedi-

<sup>11</sup> Luce and Jessop, ii. 202.

ate objects of sight as being spatially in us, to their being 'in our mind'. This gives him his conclusion, for 'in the mind' is a technical term with Berkeley, meaning that the object said to be 'in the mind' cannot exist unperceived.<sup>12</sup> We can see this process going on in section 41 of the *New Theory* where he says of the blind man newly made to see that for him the immediate objects of sight 'would all seem to be in his eye, or rather in his mind'. The whole 'argument', of course, requires only to be stated to be refuted.<sup>13</sup>

It is true, of course, that if it is granted that all that is immediately perceived by sight is a two-dimensional *appearance* or *idea*, then Berkeley can show that it does not exist independently of the mind. But the argument here owes everything to the fact that it is an *appearance* or *idea* that is perceived, and nothing to the *special nature* of the appearance; a point which, as we have seen, Berkeley admits in the course of the 'First Dialogue'. And it is interesting to note that even in the *New Theory* he makes a brief excursion to try to give additional proof that the immediate objects of sight are not without the mind, by pointing out that it is agreed on all hands (as it was in Berkeley's day) that colours are not without the mind; that is, that all colour is merely apparent. But, he goes on, visible colour and visible extension and figure cannot be separated: if one is apparent so is the other. This is the sort of argument he relies on in the *Principles* and the *Dialogues*, and it would hold (or would fail to hold) equally whether *distance* were immediately perceived by sight, or not.

There is, however, one further argument Berkeley might have used to show that, if distance is not immediately seen, the immediate objects of sight are in the mind. Suppose two persons are in the situation which we should ordinarily describe by saying that they were both looking at the very same thing, but they are at quite different distances from it. If you are one mile from a tower, and I am close at hand, the tower will bulk larger in my field of view than in yours. Now, on Berkeley's view that what is immediately seen is simply a two-dimensional manifold, we can interpret this phenomenon in only one way. For the nearer observer the object immediately seen will actually be larger: it will fill a larger proportion of the field. But if this is

<sup>12</sup> But cf. Warnock, *Berkeley*, pp. 55-7 for another view.

<sup>13</sup> This point seems to be recognized by J. S. Mill, although he accepted the Berkeleyan view that distance is not immediately seen. Cf. *Dissertations and Discussions* (Longmans ed., 1875), ii. 92.



so the immediate objects of sight of the two observers must be numerically different objects, for the very same thing, at the very same moment, cannot have two different sizes. The consequence is that situations ordinarily described by saying that two observers are looking at the same thing will regularly be situations where the *immediate* objects of vision will be numerically different. (We could develop an argument to the same conclusion based on visible shape.) Hence, it may be argued, the immediate objects of vision are private to each individual, and so are 'in the mind'; that is, their being lies in being perceived. (In section 44, as we saw, Berkeley develops an argument of this sort, but for other purposes: to help prove the numerical difference of the immediate objects of sight and touch.)

But suppose we grant, what these arguments perhaps do not prove, that no two persons ever immediately see the very same object; this would not suffice to show that the being of the immediately visible lies in being perceived. If each member of the human race lived in solitary confinement in windowless cells the objects they perceived would be private to each perceiver, but we would not be entitled to say, on the strength of this, that the being of the objects they did perceive lay in their being perceived. In the same way, the *de facto* privacy of the objects of vision would not establish their mind-dependence.

(iii) Finally, we shall try to show that the doctrine of the objects of touch presented in the *New Theory* is not really inconsistent with the Immaterialism of the *Principles*. Berkeley, it appears, was anxious to insinuate his 'New Principle' (that the being of physical things lies in being perceived), in a gradual way.<sup>14</sup> In the *New Theory* therefore, he speaks of the immediate objects of sight as being 'wholly in the mind' (although, as we have seen, he does not really do anything to prove it), but he speaks of the objects of touch in a quite realistic fashion; they are real things set in circumambient space, and he gives the impression that he thinks they exist independently of their being perceived. Nor does he put forward any considerations which would have any tendency to show that the objects of touch are 'in the mind'. Now very likely Berkeley is being perfectly candid when he says in the *Principles* that even when he wrote the *New Theory* he was a thorough-going Immaterialist; and that the position he adopted in the earlier work was put forward for dialectical reasons—he wished to lead people to the 'New Principle' by degrees. But, granting all this, it is wrong to say

<sup>14</sup> Cf. the passage in *Principles* 44 already quoted, p. 27.

(despite what Berkeley says in section 44 of the *Principles*) that the acceptance of Immaterialism involves any real alterations of the doctrines of the *New Theory* concerning the objects of touch.

Suppose that we accept Immaterialism. How must we modify the New Theory of Vision? It is clear that we must now deny that tangible objects exist independently of their being perceived, but we do not have to deny that these objects are at a distance from our bodies and set in circumambient space.<sup>15</sup> It is true that by touch we cannot perceive any objects save those which are close to our body; but, of course, Berkeley does not think that statements about objects that nobody is observing are meaningless, but only that they must be interpreted in a certain way. In fact, as is well known, he offers two different accounts of statements about unobserved objects. What might be called his 'official' answer is that to say something exists although nobody is perceiving it is an elliptical way of saying that it is observed by God, although no finite mind is observing it. If we take this interpretation there is no difficulty at all: we need not deny anything said in the *New Theory* except the implication that objects of touch might exist independently of their perception by God. Three-dimensional physical objects exist at a distance from us, and from each other; they are all observed by God, and by touch we become acquainted with their existence, and get good inductive evidence that many of the touched objects continue to exist, even when we are not actually touching them.

However, when discussing the objects of touch in the *Principles* (section 44) Berkeley seems to favour an analysis of statements about unobserved tangible objects in terms of contrary-to-fact conditional statements:

. . . in strict truth the ideas of sight, when we apprehend by them distance and things placed at a distance, do not suggest or mark out to us things actually existing at a distance, but only admonish us what ideas of touch will be imprinted in our minds at such and such distances of time, and in consequence of such and such actions.<sup>16</sup>

<sup>15</sup> Of course, a Berkeleian would have to give a relational account of space.

<sup>16</sup> I think Berkeley only puts forward this phenomenalist sort of analysis in three other places; firstly in section 3 of the *Principles*: 'The table I write on, I say, exists, that is, I see and feel it; and if I were out of my study I should say it existed, meaning thereby that if I was in my study I might perceive it . . .'; secondly in section 58: 'the question, whether the earth moves or no, amounts in reality to no more than this, to wit, whether we have reason to conclude from what hath been observed by astronomers, that

But even in this case the main points Berkeley insists on in the *New Theory* would remain. It is through touch alone that we gain acquaintance with spatial, that is, three-dimensional objects (without which acquaintance we could not even understand the notion of distance), and the notion we have of the distances of these three-dimensional spatial objects from each other is gained, not by sight, but through the non-visual experience we have of moving our body.

It appears, then, that the *New Theory of Vision* stands in no real relation to Berkeley's Immaterialism. Berkeley, very naturally, tried to make a connection, but none exists. If we read the *New Theory* as a prolegomenon to, or even as bearing on, the main theme of the *Principles* we must force the argument, as Berkeley did, and neglect the important and interesting views that lie at the heart of the *New Theory*. We have spent time on this rather dreary argument only because so many people have followed Berkeley's bad example. It is of little intrinsic interest. We can now turn with relief to a further discussion of the second main contention of the *New Theory*—henceforth our main concern—a contention that does stand in organic relationship to Berkeley's premisses; that is, the doctrine of the numerical difference of the immediate objects of sight and touch.

## 7. THE NUMERICAL DIFFERENCE OF THE OBJECTS OF SIGHT AND TOUCH

What is the general nature of the world revealed to us by our senses? For the present let us consider only what the answer of commonsense would be to this question. Let us also, for the present, restrict ourselves to the senses of sight and touch. I think that a reasonable answer will go along the following lines. These senses reveal to us a number of three-dimensional spatial objects which endure in time, some altering and some staying the same, and variously related to each other. (I use the word 'object' here in a wide sense which does not necessarily imply that we are dealing with something *solid*. Liquids and gases would count as objects.) Sight and touch are simply different ways of coming to know about these objects. There are some qualities of these objects that are immediately apprehended by sight alone, the

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if we were placed in such and such circumstances, and such or such a position and distance, both from the earth and the sun, we should perceive the former to move among the choir of the planets, and appearing in all respects like one of them'. Cf. also *Principles* 65.

obvious examples being colours. There are other qualities that are immediately apprehended by touch alone, such as hardness, roughness, hotness. But shapes, sizes, motions, can be immediately apprehended by both sight and touch. If I look at a red billiard-ball I immediately see a spherical red surface (or at any rate I see one side of the sphere). Berkeley, of course, would deny that the object immediately seen was spherical, but we are concerned here only to state the view of the matter that commends itself *at first sight*. I can also pick the ball up, and *feel* that it is spherical. I can feel a smooth spherical surface. Not only can we see the shapes, sizes and motions of visible things, and feel the shapes, sizes and motions of tangible things, but the deliverance of experience seems to be that there is *in general*, although not invariably, a spatial coincidence of visible and tangible qualities. To understand what is meant by this consider the billiard-ball once again. If we put our fingers out towards the visible red sphere, then just at the point where the finger is seen not to be at any distance from the red sphere, just at that place we feel a hard surface. The finger is not stopped before it reaches the red sphere, but neither can it penetrate the sphere. The solidity begins at exactly the place where the colour begins; the colour and the solidity are spatially coincident.<sup>17</sup> In the case of the qualities apprehended by sound, by taste, and by smell, the case is perhaps different (we shall take up this question at a later stage) but commonsense locates the qualities apprehended by sight and touch in a common space, and finds that they are usually spatially coincident. Visible and tangible qualities qualify the same place.

Now the great contention of the *New Theory of Vision*, a contention first put forward in sections 41 to 51, is that this picture of things is incorrect. According to Berkeley, it is *meaningless* to speak of the spatial relations (whether of coincidence, or not) between the immediate objects of sight and the immediate objects of touch. He puts the position very clearly in sections 111 and 112.

But to define the situation of visible things with relation to the distance they bear from any tangible thing, or vice-versa, *this were absurd and perfectly unintelligible*.<sup>18</sup>

... to speak truly, the proper objects of sight are at no distance, neither near nor far, from any tangible thing. For if we inquire

<sup>17</sup> Cf. Berkeley's own phrase about the different qualities of a cherry being as it were 'concreted together' (*Principles* 99).

<sup>18</sup> Sec. 111. My italics.



narrowly into the matter we shall find that those things only are compared together in respect of distance which exist after the same manner, or appertain unto the same sense. For by the distance between any two points nothing more is meant than the number of intermediate points: If the given points are visible the distance between them is marked out by the number of the interjacent visible points: If they are tangible, the distance between them is a line consisting of tangible points; but if they are one tangible and the other visible, the distance between them doth neither consist of points perceivable by sight nor by touch, i.e. *it is utterly inconceivable*.<sup>19</sup>

We might perhaps put the point in this way: vision gives us access to a space which is numerically quite distinct from the space revealed to us by touch. Everything visible is spatially related to every other visible thing, but they are spatially related to nothing else, and so the whole class, taken together collectively, forms a space. In the same way everything tangible is spatially related to every other tangible thing, but is spatially related to nothing else. So we have two distinct spaces, distinct because they are in no way spatially related. (Berkeley, however, might have disliked such a formulation, because he likes to restrict the term 'space' to the three-dimensional manifold of physical objects, that is, to touch-space. Notice, too, that we have put Berkeley's point in the way that a Realist theory of perception might put it. A Phenomenalist would have to treat these spaces as logical constructions out of the sense-fields of individuals.) Such a conception, of course, cuts across our ordinary notions which allow that visual and tangible objects may be spatially related; which, indeed, hold that, for the most part, visible and tangible qualities are spatially coincident; that is, they qualify the same objects. But, although contrary to our common beliefs, it does not seem to be an unintelligible conception. The idea of spatial objects which have no spatial relations to each other, which are not merely distant, but really spatially unrelated, does not seem to be an incoherent conception. Taking such a view would, however, involve accepting Berkeley's point that there is an important sense in which visible and tangible qualities 'of the same thing' are never strictly qualities of the same thing, but qualify two distinct objects which, because they are closely connected together (but not by any spatial relation), we speak of as one single thing.

Nor does Berkeley adopt this position lightly, on insufficient

grounds. He is forced into holding such a view, because he thinks that the objects revealed by sight are merely two-dimensional while touch alone gives us access to ordinary three-dimensional objects. Since 'visual space' has two dimensions only he is forced to say that it is numerically different from three-dimensional 'touch-space'. There are, of course, theorists who have distinguished between the 'space of sight' and the 'space of touch', while still holding that distance can be immediately seen; who hold, that is, that 'sight-space' is also three-dimensional. This course is taken by Bertrand Russell, for example, in *Our Knowledge of the External World* and *Mysticism and Logic*. But Russell gives no reason for thus light-heartedly making this distinction.<sup>20</sup> Berkeley, however, is forced into making the separation: it is a consequence of the original premiss of the *New Theory*, that distance is never immediately seen. Berkeley is simply accepting the implications of his argument.

At this point it may be worth while to look at a different interpretation of what Berkeley is doing here, an interpretation offered by Mr Warnock in his book on Berkeley.<sup>21</sup> According to Mr Warnock what has impressed Berkeley is the merely contingent connection between the deliverances of the various senses; he is impressed by the fact that for example the look of an object might conceivably not have been any sort of guide to the way it would feel, taste or smell; the association of such properties might have been a quite random affair; what looked like a rose might on one occasion feel like a billiard-ball, or on another not be tangible at all. Furthermore, Warnock says, Berkeley assumed that we ought *strictly* to be linguistically prepared for such a contingency, and it is this desire to be prepared that leads him to his contention that, strictly, we never see and touch the very same thing. Warnock considers the case where we say that an object is round. Berkeley, he says, wants to say that what we see to be round and what we feel to be round are different things because it is logically possible that what feels round might look square; that is, there might be no correlation between the way the world looked and the way the world felt, and so our language ought not to presume on there being such a connection. (Warnock does not mention descriptions like 'spherical' or 'flat'. In these cases, of course, Berkeley would deny that a thing might

<sup>20</sup> 'The space of sight is quite different from the space of touch.' *Our Knowledge of the External World* (Allen and Unwin, 1949), p. 118. No argument is given.

<sup>21</sup> *Op. cit.*, ch. 2.



for example look spherical in the sense in which it might feel spherical.) Warnock is then able to take Berkeley to task for failing to see that there are not two different round things involved, but rather only the one roundness, for which two criteria exist, looking round, and feeling round, criteria which are normally both satisfied on any occasion. It is true, says Warnock, that this association is simply a contingent fact, but the ordinary use of such words as 'round' *presupposes*, and quite legitimately presupposes, the existence of certain states of affairs.

Now it is true that Berkeley did think it was, as it were, simply a lucky accident (or rather he thought it was a divine mercy) that it was possible to correlate the deliverances of sight and touch. Perhaps, also, he felt that a strict language ought to be accommodated to a possible break-down of this correlation. Such a break-down would occur, for example, if whatever I bumped into was invisible, and whatever was coloured I could pass through without its offering me any resistance. But to envisage such a possibility would be perfectly compatible with the existence of *spatial relations* between the objects of sight and touch. The only difference would be that the relation would not be as we ordinarily take it to be, one of *spatial coincidence*; that is, visible and tangible qualities would not qualify the same thing. But, now, if our interpretation is correct, Berkeley is claiming that the objects of sight and the objects of touch are *actually separated* in a far more radical manner than that; that there is *no sort of spatial relation* between them whatever; all we have being a non-spatial connection between two different objects. It is this contention, not about language, *but about the nature of the world revealed to the senses*, that Berkeley wants to make. He has a point of substance to make; he is not just a linguistic Boy Scout trying to prepare our language for any break-down of customary connections that may come along.

At this point, however, we ought to consider the objection that Berkeley's disjoining of the visual and the tactual sphere is not really entailed by the view that the immediate object of sight is a merely two-dimensional manifold, while the immediate objects of touch are three-dimensional. Suppose we are standing at a certain point in physical space, and facing in a certain direction. Now if it were true that what is immediately seen is two-dimensional, still could we not treat the visual field as simply being a *projection* or *perspective* of physical space from that point of view? Such an account, it may be urged, avoids the necessity of 'forcing apart' the immediate objects of the two

senses, while doing justice to the two-dimensional nature of vision.

Now Berkeley is prepared to go a good way with this suggestion; as is made clear in the course of his interesting discussion of the way we estimate the magnitudes of objects by sight in the *Theory of Vision Vindicated*.<sup>22</sup> Here he considers 'a diaphanous plain erected near the eye, perpendicular to the horizon, and divided into small equal squares' (section 55). Although he uses the *visual* word 'diaphanous' he makes it clear that the plane is an object in physical (tactual) space, set in front of our physical body.<sup>23</sup> Now it is clear that straight lines could be drawn from objects to the eyes, passing through the plane, and that these lines would form a 'projection' of the objects on the plane from the point of view of an observer situated at the place where our physical eyes are. Berkeley then says that the relative order and magnitude of the objects in the visual field, the immediate object of vision, *corresponds* to the relative order and magnitude of the projections of physical objects on the vertical plane. The visual field is, as it were, a picture of such a hypothetical plane.

But the existence of this *correspondence* does nothing to imply that visual and tangible objects are *spatially* related, and in order to overcome the separation of visual and tactual manifolds it would be necessary to argue that the visual field actually *occupies* the position the hypothetical plane is assigned to. Only then would it be spatially related to the objects of touch. But how can a two-dimensional object occupy a place in three-dimensional space? We might certainly form the concept of a flat vertical surface at a certain place. But the visual field, if Berkeley is correct, is neither flat nor curved; it makes no sense to apply either description to it. Such a plane surface would imply the existence of a volume of which it was the surface for we cannot understand the notion of a surface without bringing in the notion of a volume. But the supposedly two-dimensional visual field calls for no such completion: it is self-sufficient. Yet if we cannot identify the visual field with such a plane it is impossible to see how it can have a place in a three-dimensional manifold. It might be suggested that the objects of sight are really three-dimensional but that we are able to perceive only two of these dimensions by sight. We can perhaps grant that this is a

<sup>22</sup> secs. 53-61.

<sup>23</sup> Professor Price has pointed out to me that not only is 'diaphanous' a visual word, but it is a *three-dimensional* visual word, so that Berkeley uses it quite illegitimately.

possibility, but it does nothing to overcome the present difficulty. Since this third dimension is never perceived by sight, we have no reason to believe in its existence. So far as what we actually perceive goes, we have every reason to treat the visual and tactual manifolds as perfectly distinct, even if we grant the bare possibility that they may not be. I conclude, therefore, that, granting Berkeley's premisses, he is right to argue to the numerical difference of the immediate objects of sight and touch.

Here, then, is the important theme of the *New Theory of Vision*—the numerical difference of the immediate objects of sight and touch. If we hold, in Realistic fashion, that what is immediately perceived by the senses exists independently of our perception of it, we can say that Berkeley is putting forward a heterodox view of the general nature of the reality revealed to the two principal senses, sight and touch. If, alternatively, it is held, in Phenomenalist fashion, as Berkeley himself held, that what are immediately perceived are sense-impressions, appearances, ideas, then we can say that he is putting forward a heterodox view of the general structure of *sensible appearance* (with regard to sight and touch). We have tried to show that the issue he raises, and the arguments which lead to his conclusions, are really independent of the decision of this dispute about the nature of what is immediately perceived. Whatever answer we give to this question, Berkeley is raising an issue of considerable importance.

It would be natural to go on now to consider whether this view that the immediate objects of sight and touch are numerically distinct can be sustained or not. Before doing this, however, we shall examine the argument of the last three of the four main divisions of the *New Theory* (so far we have confined ourselves to the first section, concerned, ostensibly, with the perception of distance by sight). The reason for this is that the last three parts are of much less importance than the first, and really only serve to amplify and apply the argument of the first. By going through them now we shall be able to get a still clearer view of the main theme, and leave our main task, its appraisal and criticism, to the end.

### III

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## *The Remainder of the 'Essay'*

*(Sections 52-159)*

#### 8. THE ESTIMATION BY SIGHT OF THE MAGNITUDE OF OBJECTS (SECTIONS 52-78)

Our concern now is with the second part of Berkeley's essay (sections 52-87), which deals with the way we estimate the size of objects by sight. This part has three further subdivisions: (i) sections 52-66, estimation of magnitude by the eye; (ii) sections 67-78, solution of the problem of the 'horizontal moon'; (iii) sections 78-87, discussion of the 'minimum visibile'. We shall deal briefly with the first two sub-divisions in this section, leaving the question of the 'minimum visibile' to a separate section.

The received opinion, before Berkeley wrote, of the way the magnitude of objects was estimated by the eye, was that, having discovered the distance of the object by the 'natural geometry' previously discussed, the observer was then able to estimate the size of the object by means of the angle subtended by the object at the eye. 'The same extension at a near distance shall subtend a greater angle, and at a farther distance a lesser angle' (section 53), and, given angle and distance, the magnitude can be determined. But, of course, as Berkeley sees, such a method is really incompatible with the view that distance is never immediately seen; and, alternatively, if we can use such methods, then there is no reason why we should not be able to estimate distances by the eye quite directly.<sup>1</sup>

The question therefore arises, for Berkeley, how we do manage to estimate the magnitude of objects 'by the eye'. Now when we approach an object a phenomenon occurs in the visual field which, if it were three-dimensional, we would describe by saying that the angle subtended by the object at our eyes grows larger. If this description is objected to, because we cannot see our eyes, then we can put it another way by saying that the amount of

<sup>1</sup> Cf. section 4 of this essay.

the field of view which the object obscures grows larger as we draw nearer to it. (A sixpence held near the eye may obscure an object as big as the moon.) Now if it is held that what is immediately seen is two-dimensional only, we can give an account of this phenomenon only by saying that the object *immediately* seen actually does grow larger as we approach the physical object whose size has not changed.

The magnitude of the object which exists without the mind, and is at a distance, continues always invariably the same: But the visible object still changing as you approach to, or recede from, the tangible object, it hath no fixed and determinate greatness.<sup>2</sup>

Since the increase of visible magnitude is a function of distance we can to some extent use it in estimating real or tangible magnitude. As we saw in the last section, Berkeley expands this doctrine in the *Theory of Vision Vindicated*, where he says that the visual magnitudes are directly proportional, not to the objects' physical size, but to the 'projection' of the physical objects on to a squared plane set up at a fixed distance before our physical eyes. The size of the projection will be a function of the size and distance of the object, and the visual size will be directly proportional to the size of the projection. This correlation of physical and visual magnitude, however, is simply a contingent fact: it is only the goodness of God that ensures such a correlation. There is no necessity in it at all, and we have to discover it by experience.

With the aid of this correlation, and the methods used in estimating *distance* by the eye, Berkeley is able to set up four ways by which we can judge the magnitude of objects by the eye:

. . . *first*, the magnitude or extension of the visible object, which being immediately perceived by sight, is connected with that other which is tangible and placed at a distance. *Secondly*, the confusion or distinctness. And *thirdly*, the vigorousness or faintness of the aforesaid visible appearance.<sup>3</sup>

Fourthly, we have the figure, number, kind, etc., of the objects seen. Thus, Berkeley says, the same amount of visible extension in a tower-like shape suggests great magnitude, but in a man's figure it suggests much less. (Once we have understood Berkeley's discussion of seeing distance, the estimating of magnitude by the eye is easy to follow, and requires no great attention.)



Berkeley goes on to give an ingenious explanation of the fact that we seldom *regard* the continuous fluctuation of visible size, but attend only to the constant tangible size:

We regard the objects that environ us in proportion as they are adapted to benefit or injure our own bodies, and thereby produce in our minds the sensations of pleasure and pain. Now bodies operating on our organs, by an immediate application, and the hurt or advantage arising there-from, depending altogether on the tangible, and not at all on the visible, qualities of any object: This is a plain reason why those should be regarded by us much more than these.<sup>4</sup>

He then applies the methods by which, he holds, we estimate magnitude by the eye to the solution of the problem of the 'horizontal moon':

The apparent magnitude of the moon when placed in the horizon is much greater than when it is in the meridian, though the angle under which the diameter of the moon is seen be not observed greater in the former case than in the latter: And the horizontal moon doth not constantly appear of the same bigness, but at some times seemeth far greater than at others.<sup>5</sup>

This problem obviously defeats a *purely* geometrical optics. Berkeley solves it by saying that since at the horizon the rays of light from the moon pass through a greater depth of atmosphere than at the meridian, more rays of light are intercepted, and so the moon appears *fainter*, which is one of the usual visible signs of greater distance, and so, indirectly, greater magnitude. Since the contents of the atmosphere change—for example the air may be more or less full of dust—the amount of apparent increase at the horizon varies. Berkeley rejects an alternative explanation, advanced by Dr Wallis, that the phenomenon is due to the fact that when we see the horizontal moon we see a great number of intermediate objects between ourselves and it (a thing that does not happen when we look *up* at the moon); and that these intermediate objects suggest a greater distance; and so, indirectly, greater magnitude. Berkeley objects firstly, that on this view the horizontal moon should not appear unduly large if we looked at it from behind a wall; and, secondly, that this explanation does not account for the *variations* in the appearance of the horizontal moon. ] 2/

<sup>4</sup> sec. 59.

<sup>5</sup> sec. 67.

## 9. MINIMA SENSIBILIA (SECTIONS 79-87)

We now come to a view of Berkeley's which he puts forward at the end of the section on the estimation of magnitude by sight, which *does* depend on his view that what can be immediately perceived are only *ideas* or *sense-impressions*; or rather, as we shall see, it depends on this view together with the inconsistent attempt to treat ideas or sense-impressions as if they had the characteristics of physical things; in particular, as if they were perfectly determinate.<sup>6</sup> It is therefore a digression from the main theme; the disjoining of the visual and the tactual realms.

How do we measure objects in the two-dimensional visual field in respect of their visible extension? The obvious answer would seem to be that such visible objects can be measured against each other, or against the whole visual field. But although Berkeley would no doubt admit the possibility of such measurement he thinks that there is, as it were, an 'absolute measure' of such extensions. 'Each of these magnitudes are greater or lesser, according as they contain in them more or fewer points, they being made up of points or minimums.'<sup>7</sup> He is prepared, moreover, to extend this doctrine to the sense of touch: 'There is a *Minimum Tangibile* and a *Minimum Visibile*, beyond which the sense cannot perceive.'<sup>8</sup> In the *New Theory* we get no argument for this view, it is simply asserted. We have to turn to the *Principles*, to his discussion of the alleged infinite divisibility of extension, to see why he puts it forward. It then becomes clear that this view is based on the premiss that all the objects of immediate perception, whether visible or tangible, or the objects of any other sense, are sense-impressions or ideas. Now if I look at a table it may look to be different from what it actually is. But my sense-impression of the table cannot look to be different from what it actually is. I can be mistaken about the table but not about my sense-impressions; the latter are, as it were, perfectly transparent. They are as they appear to be, and appear to be as they are, as Hume was to say. Consider now our sense-impressions of extended things. Since there can be nothing hidden in our sense-impressions, and since the capacities of our senses are not infinite, these sense-impressions cannot be divisible without limit. Hence, Berkeley concludes, they must be composed of a finite number of parts or minima. Since, then, the immediate objects of sight and touch are sense-impressions, the immedi-

<sup>6</sup> Cf. *Principles* 123-34.<sup>7</sup> sec. 54.<sup>8</sup> *ibid.*

ate objects of sight and touch must be composed of minima, atoms of extension which cannot have any parts, but which are capable of making up the extended objects of immediate sight and touch. The doctrine of *minima visibilia* and *minima tangibilia* is therefore a by-product of Immaterialism, or, rather, it is a by-product of the view on which Berkeley's Immaterialism is based: the doctrine that the immediate objects of perception must be *sense-impressions*.

However, there are many difficulties for the doctrine of *minima sensibilia*. In the first place there are the usual difficulties connected with any theory that holds that extensions (or durations) are composed of a finite number of minima, difficulties known since Zeno. We may put a dilemma: either these minima have an extension ('the smallest'), or they do not. If they *do* have an extension, it is not difficult to show that they will have parts, that is, they will not be minima. This is easily seen if we consider three adjoining minima, say three in a straight line. By hypothesis, the boundary of the first and the second is separated from the boundary of the second and third, that is the second minimum has distinguishable boundaries, which implies that after all it *does* have parts. Nor is the alternative any happier. If the minima have no extension, no number of them could ever amount to an extension, and so they will not perform the task that minima are supposed to perform. It might be said that this is too short a way with the second alternative. The minima, it may be said, should be conceived of as extensionless (which does, not imply that they do not exist), comprising an extension only by being linked in *spatial relations* with other minima. The extension is, as it were, something that is brought into existence between one minimum and the adjoining one; and so a finite number of extensionless minima can make up an extension. But this is simply to transfer the work that the minima are supposed to do to the relations. Since there will be an extension between one minimum and the next, this extension will have parts; that is, it will not be a minimum extension. On quite general grounds, then, a view that extensions are made up of a finite number of minima is open to serious objections.

But this is only the beginning of Berkeley's troubles. For it seems that the very argument that he uses to prove the necessity of minima can be used also to prove there are no such things. There is in a sense-impression nothing but what is actually discerned in it; hence it cannot be infinitely divisible; hence it must be made up of minima. But what do we actually discern

when we 'examine' our visual sense-impressions? Do they look like a collection of points? How would we count them? Berkeley actually says at one point that the moon looks to be about thirty visible points in diameter.<sup>9</sup> But this is just bluff. In fact most lines and surfaces look continuous, and if they look continuous, then, on Berkeley's view, what is immediately perceived is continuous and so not made up of minima. The case is even worse with tactual data. Unless, for example, I am pricked by a pin, I seldom feel anything remotely like a *minimum tangibile*. Surfaces generally feel continuous. So it appears that Berkeley's argument should really have led him to an antinomy: namely, that our visible and tangible sense-impressions are both continuous and yet made up of a finite number of minima.

The fact is that visible and tangible sense-impressions are neither made up of a finite number of minima, nor yet are they infinitely divisible. And they can avoid having either of these apparently exclusive and exhaustive alternatives because they are *indeterminate* in this respect. This is the point that Berkeley misses, and he misses it because he tries to assimilate sense-impressions to *things*. A thing must be perfectly determinate, and so must be infinitely divisible or else made up of a finite number of minima. Berkeley sees correctly that since sense-impressions are just as they seem to be, they cannot be infinitely divisible. But he still wants to treat them as things, and so concludes that they must be made up of a finite number of minima. But in fact they are vague or indeterminate; our sense-impression of an object is not itself a little object, it is our impression of an object, and that may well be indeterminate. (Hume makes the same mistake, and this vitiates his ingenious discussion of space and time in Part II of the *Treatise*.) Berkeley illegitimately tries to have it both ways. He proves that sense-impressions cannot be infinitely divisible by appealing to the fact that our sense-impressions must be perfectly 'transparent' to us, that is, by treating them as sense-impressions. But then he turns round and treats them as things, and concludes that if not infinitely divisible they must be made up of minima.

Berkeley's mistake here, of course, is not confined to the question of extension. In the 'Introduction' to the *Principles* he asserts that all our ideas, whether sense-impressions or images, are completely determined in respect of all their qualities. He says that I cannot image a triangle without giving it absolutely determinate shape and size or a piece of blue cloth without



giving it an absolutely determinate shade of blue. But in fact, of course, Berkeley is wrong here. While the blue cloth itself necessarily has an absolutely determinate colour, my sense-impression of it, or my image of it, will regularly be indeterminate. I can say, perhaps, as a result of looking, that the cloth is light blue, but I may very well be unable to specify the colour further (and not just through lack of a full colour-vocabulary). To say that one's sense-impression is fully determinate is, in fact, to commit oneself to saying that there are *unperceived* features in our sense-impressions, a doctrine Berkeley could hardly accept, and which is in any case false because our sense-impressions just are our percepts, what we perceive of a thing.

Berkeley's error, of course, admits of an easy explanation. In the *Principles* he wants to treat the material world as a construction out of sense-impressions, and so he tries to make them as like *things* as possible; in particular, he tries to give them the determinacy of things. The doctrine of minima is one result of this trying to have it both ways. But, whatever the difficulties for his metaphysics, he should have rejected minima, and accepted the indeterminacy of sense-impressions.

The doctrine that sensible extensions are made up of a finite number of minima, then, stands in no close relation to the main contention of the *New Theory*: the heterogeneity of the immediate objects of sight and touch. It is of some independent interest, as we have tried to show, for it is closely linked with Berkeley's Phenomenalism, but it does not require any further attention here.

#### 10. THE PROBLEM OF THE INVERTED RETINAL IMAGE (SECTIONS 88-120)

We pass on to the third section of the *Essay* (sections 88-120), which is devoted to the problem of the inverted retinal image. Visible objects throw a two-dimensional picture on the retina of the eye, but the rays pass through the lens of the eye in such a way that the picture on the retina is inverted with respect to the objects pictured, and is also reversed in the right-left direction.<sup>10</sup> This fact had proved a 'mighty difficulty' to current theory. As

<sup>10</sup> Cf. Gibson, *The Perception of the Visual World*, p. 48. 'The formation of an image on the retina can be observed directly. If the excised eye of an albino rabbit is fixed into a hole in a card and pointed toward a scene, by holding it in front of one's own eye, we can actually see the inverted image on the curved rearward surface, looking something like a miniature photographic transparency.'



we shall see Berkeley himself makes very heavy weather of the problem, 'this knot' as he calls it (*T.V.V.* 52). I shall outline Berkeley's solution, try to show that it is not satisfactory, and then raise the question why the whole problem gives him so much trouble, seeing that a perfectly simple solution of it is available. I shall suggest an answer to this last question.

Current theory had tried to solve the problem in the following way: the mind perceives that a ray of light strikes, say, the upper part of the eye. It then 'hunts back' along the line of the ray and traces it through the lens to the lower portion of the visual field. We are thus able to realize that, although the object is imaged on the upper part of the retina, it is itself below objects whose images appear on the lower part of the retina. The position is illustrated by a blind man who holds two sticks in his hands, so that they cross each other in the horizontal plane. He would judge that an object felt by means of the stick in his left hand would be to his right, and an object felt by means of the stick in his right hand would be to his left. Just so, it was said, do we judge in vision.

This explanation is, of course, a very easy target for Berkeley. He advances three conclusive objections against it (section 90). Firstly, he points out, it is impossible to perceive these rays of light, and their impingement on the retina, of which the theory speaks. But the theory requires that we be able to perceive them, just as the blind man must be able to feel where his sticks are in order to be able to use them in working out the position of objects. In the second place, it is simply not the case that what we immediately perceive is an inverted image, which we then, by an act of judgment, use to determine the right position of things. We see things the right way up from the start: there is nothing to 'allow for'. (Even if it were proved, as is sometimes asserted, that very young children 'see things upside-down' this would prove nothing. What happens later is that *they see things the right way up*: they do not just become good at allowing for deceptive appearance.) Thirdly (and quite conclusively from his point of view), Berkeley points out that the postulation of such rays of light implies that the immediate objects of sight are at a distance, which he has shown to be a mistake. Notice, however, that nowhere does Berkeley make the obvious point that, in vision, the *retina* is not itself seen. He makes the point only with regard to the rays of light, and their impingement on the retina. Nor does he think that these objections to the received theory

have disposed of the whole problem: the inverted image is still a problem for him, and it requires an extended discussion to deal with it.

The key to the solution of the problem, says Berkeley, lies in the distinction of the immediate objects of sight and the immediate objects of touch. He therefore proposes to consider once again the case of a man who is born blind, and then, later in life, made to see. Such a man, while still blind, would have the ideas of upper and lower, he would call 'lower' the part of his environment on which he felt himself supported, or to which he, and other things, gravitated. And he could discover the situation of his body and other things by touch. Suppose such a man is suddenly made to see. Berkeley asserts that, at first sight, he would never judge the objects seen to be high or low, erect or inverted. Berkeley does not mean by this that he would not be able to observe the visual relations that we (who have never been blind) call visibly upper and visibly lower. What is meant is that the ex-blind man would have no reason to call such relations, relations of 'upper' and 'lower'. For these terms have for the blind man a tactual meaning. But since, as Berkeley's earlier argument has purported to show, the visible and tactual world stand in no sort of spatial relation to each other, there can be no question of describing the visible relations as 'upper' or 'lower'. For this would imply that the visible objects had a spatial relation to the objects of touch.

Nevertheless, it may be objected, whatever hypothetical blind men suddenly made to see would do, *we*, persons ordinarily situated, do apply the terms 'upper' and 'lower' to visible as well as to tactual objects, and we seem to be quite unconscious that there is any difficulty here. For instance, we do not scruple to say that the visible head is above the tactual foot. What I see can be above what I feel. This seems to cast doubt on Berkeley's view. However he can give an ingenious and quite plausible answer to this difficulty, which explains why we thus amalgamate the separate realms of sight and touch. Firstly, there are movements of our *eyes* and our *head*. (Here he is referring to the tangible eyes and head, and the movements are not things we see, but rather things that we feel.) Now a movement of the head up, while the eyes are kept still relatively to the head, or a movement of the eyes up, while the head is kept still, brings into view different objects. Other movements of the head or the eyes bring into view other objects. These movements, and their directions, can be *felt*. It is therefore very natural to *transfer* the description of 'upper' to those objects which come into view

when the head or eyes are felt to turn up. And the same will hold for other descriptions, such as 'lower', 'right' and 'left', etc. So, says Berkeley: 'this seems to me the true reason why he should think those objects uppermost that are painted on the lower part of his eye: For by turning the eye up they shall be distinctly seen . . .'<sup>11</sup> (Note that Berkeley, in this passage, is still going along with current theory: he speaks as though it is the retina that is the immediate object of sight; or, at least, he does not contradict this view explicitly.)

The second reason we speak of 'upper' and 'lower' with regard to both visible and tangible objects is that, after making this preliminary correlation, we come to realize by experience that there are further correlations between visible and tangible objects; so that, eventually, we can judge of the tangible relations of things just from our observation of visible objects. Hence the transfer of these descriptions becomes very easy. We might expand Berkeley's second reason here by saying that what we discover is that there is a correlation or isomorphism between the visual and tactual fields. A certain sort of visual appearance in one corner of the visual field is found to go along with a certain sort of feeling in a corner of the tactual field (of which our body is the centre). The other visual appearances adjacent to the visual appearance are also correlated with certain sorts of feelings adjacent to the corner of the tactual field. And so on. Once this isomorphism is established we shall naturally apply words like 'upper' and 'lower' to tangible and visible objects indifferently. But, says Berkeley, it is only the goodness of God that allows of such correlation. The isomorphism is not necessary, it might break down, and, if it did, all reason for applying spatial words to the relations of visible objects to tactual objects, and vice versa, would disappear.

It is clear, on this view, that there is no necessary connection between the two-dimensional visible object called a human body, and the tangible object called a human body. Berkeley, however, considers at some length the objection that because there are, for example, two and only two, visible feet, these have a natural correspondence with the two and only two, tangible feet. Berkeley makes two points in reply to this. Firstly, he says, a diversity of visible objects does not imply a diversity of tangible objects. A picture containing many different colours may be smooth and uniform to the touch. Secondly, he makes some interesting remarks about number. Number, he says, is ordinarily

reckoned one of the primary qualities, but it is not really 'a fixed and settled property' but is just a 'creature of the mind'.<sup>12</sup> A house, for instance, may truly be said to be one thing, or to be many things. Number is relative to the unit we choose. And so what we call two tangible feet could be equally said to be any number of pieces of flesh, and so all trace of a correspondence with the two visible feet would vanish.

It follows from all this, says Berkeley, that we can talk, in one sense, of the relations of high and low among tangible objects; and, in another sense, of the relations of high and low among visible objects; but, *strictly speaking*, it is nonsense to talk of relations of high and low holding between visible and tangible objects; unless this is just a way of talking of non-spatial correlations of visible and tangible objects.

It is this doctrine he relies on to solve the difficulty of the inverted image. The difficulty, of course, is simply this: the head of a man (for instance), which as it is painted on the retina is nearest the earth, is *seen* to be farthest from the earth. How is it we manage to see things the right way up despite the inverted image? Berkeley's solution is presented most clearly in the *Theory of Vision Vindicated* (sections 50-51). Here he points out that the picture formed by the rays passing through the lens of the eye must be, not a visible, but rather a *tangible* object.<sup>13</sup> For when we talk of rays passing through a lens and falling on to a retina we are talking in three-dimensional terms, and so are talking about tangible objects. The rays from tangible objects may form an image on the retina of a tangible kind, and this image may be inverted with respect to tangible objects in space. But this image is never seen at all. Even if it be granted, therefore, that what is immediately seen is in some sense a picture 'in the fund of the eye' this visual picture must be something quite distinct from the three-dimensional retina, and speaking of it as being 'in the fund of the eye' cannot mean that it is literally in the physical eye. For visual and tangible objects cannot be spatially related. There can, therefore, be no sense in speaking of what is immediately *seen* as inverted,

<sup>12</sup> Berkeley gives his doctrine an unduly subjectivist flavour by talking of number as a 'creature of the mind'. Once the unit has been fixed, say that of a brick, it is a perfectly objective question how many units a house contains. But in so far as he is asserting that number cannot be a property of a thing in the way shape, size, colour and temperature can be, he is quite correct. *Unless we specify a unit*, attribution of number does not raise any real issue. Numbers are *abstract*, as compared with shapes and sizes, and cannot therefore be counted alongside the other qualities of objects.

<sup>13</sup> Cf. also *N.T.V.* 117.



provided the objects immediately seen have their usual relation *among themselves*, and have their usual non-spatial correlation with tangible objects.

Let us suppose the pictures in the fund of the eye to be the immediate objects of the sight. The consequence is that things should appear in the same posture as they are painted in; and is it not so? The head which is seen seems farthest from the earth which is seen; and the feet which are seen seem nearest to the earth, which is seen; and just so they are painted.<sup>14</sup>

Inversion is a relative term. Things are only inverted relative to something else, and so if the immediate objects of sight have all their usual relations to each other, and their usual non-spatial correlation with tangible objects, there is nothing else by which we could judge them to be inverted.

- Nevertheless, this solution seems to leave out something. What about the *visible* picture that I can see when I look into another eye, or which I can imagine myself seeing? Is it not inverted with respect to the objects of sight? And did not the whole difficulty begin with this? Unfortunately, Berkeley does not discuss this question in the *Theory of Vision Vindicated*, but it is dealt with in the *New Theory* in sections 116-19. Here he considers an eye A that looks into another eye B. A sees a little inverted picture in B's eye, and concludes that the picture is inverted for B. But, says Berkeley, this picture is only thought to be inverted, relative to A's visual field of which the little picture is a small part. But B, who sees only what is represented by the little picture in A's visual field, will not judge what he sees to be inverted; for what is a little picture to A, is to B his own visual field; and this, for B, is ordinary non-inverted vision. In this visual field a perceived man's feet are next to the earth, and so the man cannot be said to be inverted. And while the usual non-spatial correlations with tangible objects persist, there is no sense in B saying that his field is inverted *as a whole*.

It is not hard to see, however, that Berkeley is still in trouble. For cannot we say that B's visual field is inverted with respect to A's? If we identify the 'little picture' with B's visual field, as Berkeley seems to be doing, we can certainly say this. For A sees a little inverted picture in B's eye. This is identified with B's visual field; and so A's and B's visual fields are inverted in respect to each other. But what about a third person C? By the



same argument his visual field will be inverted with respect to both A's and B's field. But these are inverted in respect to each other! We are thus landed in an absurdity.

The reader deserves an apology for being dragged through this tortuous argument. We may now raise the question the reader has probably already raised, why Berkeley makes such heavy weather with the whole problem. For it seems that he could have dealt with the whole thing without even bringing in the distinction between visual and tactual objects, or the difficult (and unsatisfactory) argument about the inverted pictures seen in another eye. Let it be granted, for argument's sake, that we never see unless there is a picture formed on the retina which is inverted with respect to (a) the objects immediately seen by ourselves and others, (b) tactual objects felt by ourselves and others. Even after making these concessions it would seem that Berkeley should not have the slightest difficulty with the argument. All he has to do is to point out that when we see, we see *visual objects*, not *retinae*, the retina remaining completely invisible, and never even thought of 'by those unskilful in optics'. The inverted retinal image, he might have said, is simply an accompaniment or condition of seeing, it is not what is seen. It has the same sort of importance and status in vision as the optic nerve being in good condition, or our eyelids being open. The fact that the image is inverted no more proves that what we see is inverted, than does the fact that the optic nerve is grey prove that all we see must be grey.

Why did not Berkeley take this simple way out? Was he hypnotized by the amount of attention that had been paid to the retinal image, or did he simply fail to see the argument of the previous paragraph? Or did he want to use the opportunity to re-emphasize the distinction between visible and tangible objects? According to Mr C. M. Turbayne, Berkeley's failure to distinguish clearly between the 'little pictures' and the immediate objects of sight is purely dialectical; he wants to argue *within* the assumptions of contemporary theory, and prove the retinal image presents no problem even if we accept these assumptions.<sup>15</sup> But, as we have seen, Berkeley does not really manage to get a satisfactory solution in this fashion.

Our own suggestion is this: at the beginning of his essay Berkeley tried to prove that distance is never immediately seen by saying: 'distance being a line directed end-wise to the eye, it

<sup>15</sup> 'Berkeley and Molyneux on Retinal Images', *Journal of the History of Ideas*, June 1955.

projects only one point in the fund of the eye, which point remains invariably the same, whether the distance be longer or shorter.<sup>16</sup> Now, as we saw, this argument is really only valid *if the immediate object of sight is the fund of the eye*. So when Berkeley comes to discuss the inverted retinal image he is hoist with his own petard. He cannot afford to distinguish clearly the visible retinal image and the immediate objects of sight, because this would imperil the argument for his original premiss. The result is that he can give no short or satisfactory solution of the problem of the inverted retinal image.

With this suggestion we may leave the third part of the *Essay*. Besides this curious interconnection, its only intrinsic interest lies in the very full discussion of the way we come to correlate visual and tactual space. Berkeley, as we have seen, handles this question ingeniously, and is thus able to forestall certain possible objections to his whole theory.

#### 11. THE SPECIFIC DISTINCTION OF VISUAL AND TACTUAL OBJECTS (SECTIONS 121-48)

Berkeley devotes the fourth, and last, division of the *Essay* to considering (i) whether there is any idea common to both the senses of sight and touch (sections 121-48); (ii) whether it is the objects of sight or of touch that geometry is concerned with (sections 149-59). At present, we shall consider only the first of these topics.

The question Berkeley is raising is whether words like 'round', 'square', 'extended', etc. *have the same meaning* when applied to the immediate objects of sight, on the one hand, and the immediate objects of touch, on the other. The obvious answer, of course, is that they do have the same meaning, and the various 'modes of extension' have regularly been placed in lists of 'common sensibles', characters of objects that can be discerned by more than one sense, ever since Aristotle's time. Now it might seem that this question had already been settled, as far as Berkeley is concerned, by his proof that visible and tangible extensions are two different things, which we only treat as one thing because they are closely (though not spatially) connected. But, as Berkeley points out, all that this argument has proved is that visible and tactual extensions are *numerically* distinct. The question that he now raises is whether visual and tactual extension may not be also *specifically* distinct; whether they

may not be two different *sorts* of thing, masquerading under the same name. (Two identical twins differ in *number*, they are two different things, but they do not differ specifically, they are the same sort of thing.) Although Berkeley thinks he has shown that, speaking strictly, we never see and touch the very same thing, it may still be possible to see and touch the very same *sorts* of thing. Now, of course, if Berkeley's whole argument is right, there is one obvious specific difference between visible and tangible extension, for the former is two-dimensional, the latter three-dimensional. But the question to be investigated is whether this is the *only* difference. When we say that visible extension has two dimensions, tangible extension three, apart from the difference entailed by the different number of dimensions, are we using the word 'extension' in the same sense in each case? This is Berkeley's question, and it is not to be decided by discovering a numerical distinction between visible and tangible objects. And his answer to the question is that, contrary to the obvious view, visible and tactual extension are specifically different: that the word 'extension' refers to two different *sorts* of thing in each case. We shall find, however, that, unlike his demonstration of the numerical difference of the objects of sight and touch, his arguments are by no means a correct deduction from his premisses, and that he offers no real reason for denying that extension is a 'common sensible'.

In order to become a little clearer about the issue that is being discussed here we may glance at Mr Warnock's treatment of it in chapter 2 of his book. Here he considers Berkeley's blind man, and he says that it is clear that such a person could learn how to use the word 'round' after he had touched round objects. Suppose, then, a tennis-ball be set before him, and he suddenly be made to see. Would he be able to apply correctly the word 'round' to the visible object before him? Warnock says: 'Berkeley answers that he would not, and no doubt he is right.' The reason for this, he says, is that the blind man

... has learned to apply the word 'round' not, as normal people do, by looking at objects as well as touching them, but only by touching them; even if he never applies it incorrectly, he has still not learned to use it in the ordinary way. Part of its ordinary use is inaccessible to him, because he lacks the use of his eyes. Of course he does not know how a round object looks: he has never seen such a thing . . .<sup>17</sup>

<sup>17</sup> Berkeley, p. 38.

Warnock goes on to argue that all this, however, does not imply that there are two instances of roundness involved, but simply that there are two different, contingently connected, criteria for an object's being round; that is, round to sight, and round to touch. But, in fact, he has uncritically granted the whole point of substance that Berkeley is arguing for, demurring only on a question of nomenclature. For if the roundness that is revealed to touch is the same *sort* of characteristic that is revealed to sight; if the 'roundness' of a felt object is, with respect to roundness, the same sort of characteristic as the 'roundness' of a colour-surface, what is to hinder the blind man, suddenly made to see, from realizing the resemblance between what he sees, and what he felt? No doubt in actual experiments the blind man would make a very bad fist of it, his new experience being so confusing, so overwhelming, and so difficult to organize. But if there is a specific identity between the sort of characteristic we perceive when we are said to 'feel a round ball', and the sort of characteristic we perceive when we are said to 'see a round ball', it seems at least possible in principle that the blind man should recognize this identity. Warnock seems to beg the question by importing the *sense* by which we discover the roundness of a thing *into the meaning of the word 'round'*. (The confusion is helped by his using the vague word 'use' in place of 'meaning'.) Now seeing something round and touching something round are two different things; and so, if seeing and touching are included in the meaning of 'roundness', then we do have two distinct criteria for applying the word. But it does not really follow that *what is seen*, and *what is touched*, may not be objects that *have certain common characters*, for example, roundness; nor that we cannot discover this by feeling and by looking. Berkeley, of course, denies that there are such common characters discovered by sight and touch, but he does not beg the question in the way that Warnock does. He does not confuse the way of discovering what character a thing has (for example looking or touching) with the character itself.<sup>18</sup>

We may now go on to consider the arguments by which Berkeley tries to show that visible and tangible extensions are not the same sorts of objects. After a brief skirmish against 'extension in the abstract' (sections 122-5), a preliminary to the

<sup>18</sup> 'Now, if a square surface perceived by touch be of the same sort with a square surface perceived by sight, it is certain the blind man here mentioned might know a square surface as soon as he saw it: It is no more but introducing into his mind by a new inlet an idea he has been already well acquainted with.' (*N.T.V.* 133.)



general assault on all abstract ideas in the *Principles*, he lays down his thesis as follows:

*The extension, figures, and motions perceived by sight are specifically distinct from the ideas of touch called by the same names, nor is there any such thing as one idea or kind of idea common to both senses.*<sup>19</sup>

He advances *three* arguments for this proposition. Firstly, he says that a man born blind would not, at first reception of his sight, think the things he saw were of the same nature as the objects of touch, or have anything in common with them. But this is simply assertion, not argument; nothing has been said to prove that this is so, unless, for example, we argue invalidly as Warnock does above.

Secondly, he argues, 'light and colours' are the *only* immediate objects of sight. There is therefore no idea common to both senses. This is a very curious argument indeed and has, very naturally, led to a great deal of puzzlement about what Berkeley took the immediate objects of sight to be. Surely, he does not mean to deny that the 'light and colours' (ultimately made up of 'minima visibilia' in his view) are *ordered* in some way among themselves? Does he mean to deny that they are arranged in a certain manner, and that we can *perceive* this arrangement? That he does not want to deny this seems to appear in the very next paragraph where he asserts that we cannot conceive colour without visible *extension* or visible extension without colour. This 'visible extension' must be at least an *ordering* or *arrangement* of the minima visibilia (as we have seen, Berkeley thinks of it as a two-dimensional order); and if light and colours are ordered in this way the *ordering* relations might be the idea common to both senses. It may be true that 'light and colours' are the *only qualities* immediately visible, but the *relations* these qualities have are also visible (nor, as we have seen, does Berkeley really want to deny this). So, for all Berkeley has shown, the *same sort* of relations as are apprehended by sight are apprehended by touch, even though the one is a two-dimensional order, and the other a three-dimensional one.<sup>20</sup>

Thirdly, Berkeley argues, quantities of the same kind can be added together, while quantities of different kinds cannot be so

<sup>19</sup> sec. 127.

<sup>20</sup> We may be reminded that Berkeley says, in the *Principles*, that strictly we have no *idea* of relations, but only a *notion* of them (cf. sec. 142). But, in this case, may not the two senses yield common notions? In any case the doctrine of 'notions' only appears in the second edition of the *Principles*.



added. Thus geometers add lines together, but cannot add lines and areas. Now, he asserts, we can add a red and a blue line, but we cannot add a visible to a tangible line. Once again, however, this seems to be assertion, not argument. The impossibility of such addition is by no means intuitively obvious. Can I not pace out part of a distance, and then measure the remainder by eye? I conclude, therefore, that Berkeley has failed to prove his case.

Absence of proof, however, is not disproof, and Berkeley goes on to examine the objections that might be raised against his view, and tries to show that he can explain them all away. In the first place, it may be asked, why are visible extensions and figures called by the same name as tangible extensions and figures? Does this not imply a resemblance between them? Berkeley says no, and gives an ingenious example to illustrate his point. It is customary, he points out, to call words and the thing the words signify by the same name. 'Square' is both the name of a certain figure and of a certain word. We follow this practice because we are little interested in words for their own sake, but only in what they signify. Visible 'squares', Berkeley suggests, stand to tangible 'squares', as the word 'square' stands to squares. Through *de facto* connection visible 'squares' become the marks of tangible 'squares' and since we are little interested in the immediately visible for its own sake, but only in the tangible, the mark is given the same name as the thing marked. But no resemblance is implied. In the second place, it may be objected, even granting the point just made, is it not still true that the visible square is *more like* the tangible square than it is like the tangible circle? For instance, both have four equal sides, but the tangible circle lacks these. Berkeley admits that the visible square is more like the tangible square than the tangible circle. But, he says, this is only because the visible and the tangible square both contain four distinct, equal, parts; it is not because of any closer identity. In just the same way written words resemble spoken words. They are in no way alike, but, with the same word, there is a correspondence between the order of the letters and the order of the noises. It is arbitrary what letters represent what sounds, but once the correlation has been set up, it is not arbitrary how spoken and written words are correlated. This gives us a model by which to understand the 'resemblance' of the visible and the tangible square. Thirdly, it may be asked why the connection between visible and tangible objects seems much more close than that between, for example, words and meanings. Berkeley offers several explanations: (i) the

connection of visual and tangible things is a constant and universal one, but linguistic connections are variable and conventional; (ii) the motions of head or eyes, when we look at different things, though perceived by feeling, are so intimately connected with vision that they seem part of it, and so we confuse visible and tangible things; (iii) we can see at any time a great variety of *distinct* objects, and the same is the case with touch. Other senses give us blended impressions: sounds, tastes and smells, all tend to 'coalesce' when they come together. We are then led by this analogy between sight and touch to *identify* them.

Now although, with great ingenuity, Berkeley thus gives his doctrine here a certain plausibility, it remains a difficult one. It may be objected that it is no more difficult than his assertion that visible and tangible extensions are *numerically* distinct. But, as we saw, while his premisses forced him to assert the latter, there is no corresponding necessity to assert that visible and tangible objects are *specifically* distinct. Furthermore, it is worth pointing out, whatever is the case with extension, there is one idea that certainly is common to both sight and touch. This is the idea of *succession*. It is quite certain that we may observe a sequence of events in the sphere of the visible; it is quite certain that we may observe a sequence of events in the sphere of the tangible; and it is quite certain that the word 'sequence' is used in just the same sense in each case. So there is at least one 'idea' common to both senses. Once we see this, although Berkeley's view remains a *possible* one, there seems no real reason to deny that there is *another* common 'idea'; that is, that visible and tangible extension have a real resemblance. It does not seem possible to *argue* Berkeley out of his position, once it is granted that visible and tangible extensions are numerically distinct. (Of course, if it can be shown that this latter doctrine is an error, as I hope to show, there is no question of specific difference.) The decision would simply have to rest with perception, but in default of convincing arguments to show that the two extensions must be specifically distinct, the decision of perception would seem to go against Berkeley.

The only question we are left with is the problem why Berkeley wanted to say that the two sorts of extension were specifically distinct. One possible answer is that, if this doctrine could be successfully maintained, it would provide an additional proof of the proposition that visible and tangible extensions are numerically distinct. For if they are specifically distinct, they

must be numerically distinct: it cannot be the numerically same roundness that I see and touch.

12. THE OBJECTS OF GEOMETRY. RESUMÉ  
OF BERKELEY'S CONTENTIONS (SECTIONS 149-59)

In the last portion of the *Essay* Berkeley considers what is 'the object of geometry'. Having shown that there is no such thing as extension in the abstract, and that there are two kinds of sensible extension and figures 'which are entirely distinct and heterogenous from each other', it is natural, he thinks, to inquire with which of them geometry is concerned. And even if we said, with modern mathematicians, that *geometry* is not really concerned with extensions at all, but is a purely formal science, we should still want to know to what objects it could be applied, and what existing objects were, historically speaking, the stimulus for geometrical investigations.

Now the natural answer to this question would seem to be *visible extension*. Geometers work with visual diagrams, and, in general, use their eyes far more than the sense of touch. Nevertheless, says Berkeley, geometry is really concerned with tangible extension; the visible diagrams serve only in the sort of role that words have in a piece of reasoning: they are *marks* of tangible figures. In order to show that this is so, Berkeley considers the case of an intelligence which perceives all the immediate objects of sight that we do, but which has absolutely no sense of touch. Could such a spirit understand geometry? Berkeley then points out that he could form no idea of a *solid*, that is, quantity in three dimensions, because, simply by sight, he could form no conception of distance. He could therefore know nothing of solid geometry. Nor could he understand the use of the rule and compass (for the compass has to be *perpendicular* to the plane of the figure), or the superposition of figures. Finally:

And perhaps upon a nice inquiry it will be found he cannot even have an idea of plain figures any more than he can of solids; *since some idea of distance is necessary to form the idea of a geometrical plain*, as will appear to whoever shall reflect a little on it.<sup>21</sup>

Berkeley's idea here, presumably, is that a plane is a *surface*, and surfaces imply *volumes* of which they are the surfaces. Flatness,

<sup>21</sup> Sec. 155. My italics.

he says, is no more discerned immediately by sight, than, say, concavity. A flat or plane surface is one that appears *to the touch* smooth and uniform, just as an uneven surface is one that is not uniform *to the touch*. So it appears that Berkeley's hypothetical spirit could not even have the concept of a plane.<sup>22</sup> It follows that the immediate objects of sight are not the objects of geometry.

Now although Berkeley is committed to saying that the notion of a three-dimensional geometry, and even that of a plane geometry, is based on our experience of tangible extension, it appears that there still could be a two-dimensional geometry, and that a spirit who never had any tactual experience, but only visual, could attain to, and apply, this sort of geometry, which would, at least, have close resemblances to plane geometry. Perhaps Berkeley came to realize this, because in the *Principles* he seems to take the object of geometry to be sensible extension *generally*. There is, at any rate, no explicit confining of geometry to tangible extension.

We have now finished our survey of Berkeley's argument. Starting from the premiss that distance is not immediately seen he develops two lines of argument. In the first place, he argues that this leads to the conclusion that visible and tangible extension are *numerically* distinct. We have agreed that this step is inevitable once his premiss is granted. But he goes on to argue that visible and tangible extension are *specifically* distinct, and we have seen no good reason to follow him here. In the second place, he argues that visible extension is 'in the mind'; that is, that its existence lies in being perceived. We have seen no reason to allow this argument. Berkeley can show that visible extension is 'in the mind' only if what is immediately perceived is a sense-impression (an idea or appearance), and the fact that distance is not immediately perceived is irrelevant to this question. (Incidentally, it is because he treats what is immediately perceived as ideas, yet, at the same time, inconsistently tries to give the immediately perceived the determinacy of physical objects, that he is led to the doctrine of *minima sensibilia*.) The main theme of the *Essay* is, therefore, the view that visible and tangible extension are numerically distinct.

<sup>22</sup> The quotation above seems to be evidence for our view that Berkeley took the immediate object of sight to be a two-dimensional manifold. A merely two-dimensional manifold is *very like* a flat surface: it is not identical, but is easily confused with it. This would explain the necessity for a 'nice' inquiry, Berkeley in effect admitting that confusion is easy here.

We can now understand, also, the place of the purely optical material in the *Essay*. If distance is not immediately seen, we shall have to explain how it is we can estimate the distance and magnitude of objects 'by the eye'. The question whether the cues Berkeley enumerates are the right ones, is, philosophically, a question of minor importance, though it may be a question of importance to students of vision. And even if Berkeley is wrong in thinking that distance is not immediately seen, the cues he enumerates might still play a part in *supplementing* our immediate visual perception of distance. Once again, however, this would still be a matter of purely optical interest, and so it does not require further discussion here.

We have, then, three theses before us: (i) that visual extension has only two dimensions; (ii) that the visual and tactual extensions of what is ordinarily called 'the same object' are numerically distinct; (iii) that visible and tangible extensions are also specifically distinct: different sorts of thing masquerading under the same name. The relations between these three doctrines are quite complicated: they do not stand or fall together. If the visual and tactual extensions of objects are not distinct, this will mean that visual extension must have three dimensions, nor can visual and tactual extensions be specifically distinct. But if visual and tactual extension are numerically distinct, this would be compatible both with a two-dimensional and a three-dimensional view of visual extension. Again, both these possibilities could be combined with the doctrines that visible and tangible extension are, and are not, specifically distinct. However, for reasons already given, we shall ignore the third thesis, that visible and tangible extensions are specifically distinct. Berkeley's arguments for it are quite inadequate, and, lacking positive argument, the view seems to have nothing to recommend it. Our concern, then, is with the first two theses: that distance is not immediately seen, and the implied (but distinct) doctrine of the separation of the objects of sight and touch.



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*Criticism of Berkeley's Conclusions*13. EXPERIMENTAL EVIDENCE: ITS RELEVANCE  
TO THIS INQUIRY

But before going on to consider whether these contentions of Berkeley are true or not we ought to think about a quite general objection that might be made to the whole proceedings. The question may be raised whether these issues are really matters for *philosophical* inquiry at all, and so whether they do not fall outside the sphere of our competence. The reason for raising this objection is that these inquiries seem to be empirical ones: it seems to be a contingent matter of fact whether or not Berkeley's assertions are correct. Now philosophy, it may be argued, moves in the sphere of logical necessity: it is concerned with, or can only profitably be concerned with, conceptual, or at any rate non-empirical, inquiries. For the philosopher to seek to discover the nature of reality is a presumptuous encroachment on the domain of science. In particular, it may be argued, we should look to settle the questions Berkeley raises, not just by thinking about them, but by making observations, and conducting experiments. The thing to do, for instance, is to stop just talking about what things would look like to a blind man who suddenly regained his sight, and instead investigate actual cases where persons blind from birth have acquired their sight. If such persons report that the sort of thing they have been accustomed to call round bears no resemblance to the visual shapes normal people call round, if the objects of sight seem to them to be merely two-dimensional, and if the objects of sight seem to be in no way spatially related to the objects of touch, then Berkeley's view is confirmed. But if such persons spontaneously transfer their descriptions of the shape of tangible objects to the new visible objects, and if they spontaneously identify the object they are touching as being the very same object as something in the visual field, then we can conclude that Berkeley's view is quite wrong. By this means we can be saved much tedious and speculative argument. Indeed, Berkeley himself points the way: in the *Theory of Vision Vindicated* he refers to the case of a boy who

recovered his sight (the famous 'Chesselden case') and he claims that the boy's report verifies his view.

The preliminary answer to this line of argument is that the experimental evidence which can be obtained is by no means conclusive. The available evidence falls into two classes: firstly, reports of the first visual perceptions of cataract patients who have been blind from birth, but who gained sight as a result of later operations; and secondly, studies of the behaviour of newly-born animals, or animals brought into the light after having been reared in darkness.

Sixty-six case-histories of such cataract patients have been compiled by M. von Senden.<sup>1</sup> His evidence is summarized by J. J. Gibson, whom we shall follow.<sup>2</sup> The outstanding fact was that the patients were bewildered and confused by their new experiences. They found it almost impossible to describe what they saw. The question 'Are things projected in space?' meant nothing to them.<sup>3</sup> It took them weeks or months to learn to see, some even needing training and drill. At the beginning the patients could not apply even simple spatial words such as 'long' or 'short', 'curved' or 'straight', 'square' or 'round', to visual objects although they could say that a long object and a short object were *different* from each other. Molyneux's famous cube and sphere could be told apart, but could not be recognized to *be* a cube and a sphere by sight alone. Some learning, however, was rapid; in particular the words 'motion', 'large' and 'small', 'far' and 'near', were quite quickly applied correctly to visible objects. The chief difficulty lay in recognizing visual shapes. Gibson sums up by saying: 'There are indications that . . . [the patients] saw more nearly a visual world than a flat visual field, but something less determinate and less specific than the literal world which we see.'<sup>4</sup> These results, however, are not very unfavourable to Berkeley's view. Experiments on newly-born animals, or animals that had been reared hitherto in darkness, are much less favourable. In many cases such animals seemed to be correlating the visual and tactual experiences quickly and easily.

Nevertheless, I do not think that this evidence, such as it is, tells very heavily on one side or the other. Both parties in the

<sup>1</sup> *Raum- und Gestalt-auffassung bei operierten Blindgeborenen vor und nach der Operation* (Barth, Leipzig, 1932).

<sup>2</sup> *The Perception of the Visual World*, ch. 12.

<sup>3</sup> Presumably this means that patients could not understand the question when they were asked whether they perceived distances out from the eye.

<sup>4</sup> *Op. cit.*, p. 218.

dispute can explain away unfavourable observations fairly easily. A Berkeleyan can explain the observations on lower animals, and even the rapid learning of cataract patients (in so far as it occurs), by postulating an instinctive tendency to make correct correlations between the numerically different objects of sight and touch, in much the same sort of way that, for example, we spontaneously tend to eat certain things, and not others.<sup>5</sup> And just as in the case of eating, such an instinctive tendency to make correlations can be teleologically explained by reference to its value in promoting survival. As a matter of fact, this very way out is taken by J. S. Mill when defending Berkeley's theory against criticisms based on the observations of animals. Mill says: 'To refute him [Berkeley] . . . therefore, it would be necessary to show, not only that animals can distinguish distance as soon as they are born, but that they distinguish it by the sight itself, and not by interpretation of signs.'<sup>6</sup> This sort of defence involves rejecting Berkeley's view that correlations between visible and tangible objects are learnt as a result of association, substituting instead an instinctive tendency to make the right correlation; but the essentials of his theory are left standing.

The observations that seem to favour Berkeley can also be explained away pretty easily by an opponent of his views. It might be argued that a man born blind and then made suddenly to see might very well be so confused by his new experiences, and find such difficulties in organizing them, that he would not be able to appreciate that he was dealing with the very same objects that he knew by touch. He would be literally dazzled. Like any other cognitive activity, seeing has to be *learnt*; it is not perfect right from the beginning; and what Berkeley would call the building-up of a correlation between objects seen and objects touched, which we then mistakenly identify, might equally well be regarded as a gradual coming to see the world more and more clearly. What we immediately see when we first gain our sight might be much less than what we *immediately* see after much using of our eyes. There are two factors, in particular, which would tend to confuse a man born blind, and then made to see. Firstly, assuming Berkeley is wrong, sight is quite different from touch in that it enables us to perceive objects that are at a distance from us. Now it must be very difficult for the blind man

<sup>5</sup> As Professor Price points out to me, Berkeley probably would not have liked the notion of instincts because they would have smacked of 'innate ideas'. But there would have been nothing formally incompatible with his position in accepting them.

<sup>6</sup> *Dissertations and Discussions*, ii. 108.

to appreciate this when he first comes to see. He may very well have a tendency to construe the perception of visible objects after the model of the perception of tangible objects, and take them to be at no distance from him. Secondly, the *felt* accompaniments of seeings and feelings of objects are quite different: it feels different to move one's head and eyes, focus one's eyes, etc., on the one hand, and to move one's hand so as to grasp an object on the other. This means that the total experience of *seeing a thing*, and the total experience of *feeling a thing* may be different, even when the object immediately seen and the object immediately felt are specifically and even numerically identical. This might lead the blind man on seeing and feeling the same thing to treat the experienced difference as implying that he was dealing with two different things. (This point will receive amplification when we come to discuss the nature of touch.) It appears, then, that the experimental evidence speaks with a rather uncertain voice.

But it is not surprising that the experimental evidence available yields no really conclusive results. It is not *impossible* to conceive experimental results which would settle the whole question, but it seems unlikely that any such investigations would in fact do so. The reason for this, it seems, is that Berkeley is raising a very general question, and one that is, in a sense, very elementary. He is putting forward a heterodox view about the general nature or structure of the reality revealed by the senses, or, in his own phenomenalist terms, a view about the general nature or structure of sensible appearances. Now such a question, if it cannot be decided off-hand, may well be very difficult to decide by complex scientific experiments and observations. Scientific observations and experiments are conducted against a background of assumption; very often the results obtained seem only to have meaning and significance against that background. With different assumptions we can interpret the result differently; the experiments and observations seldom point unambiguously in the one direction. So when we want to decide some very elementary and fundamental question, such as the one Berkeley is raising, and when some sort of case can be made out for both sides of the dispute, scientific work, with its elaborate background of assumption, may not be very helpful. For it will tend either to beg the question, or else to be capable of being interpreted to the satisfaction of both parties in the dispute.

All this suggests that the case for, or against, Berkeley must be decided, if it can be decided at all, by quite simple and



elementary observations; observations available to everybody, although not everybody may reflect closely upon them. Now it is the simple and elementary character of the observations that seem required to settle this question, that make it, although not a purely conceptual matter, yet still a suitable field for *philosophical* inquiry. For a characteristic feature of philosophical inquiry, the scrutiny of the obvious, is well-adapted to the question in hand. We should not rule out the possibility of settling the matter experimentally, but it is quite probable that the philosopher may be able to advance considerations capable of influencing the intellect in this matter. Berkeley's theses, in fact, are concerned with border-questions: they lie between characteristically philosophical, and characteristically scientific questions. They merit the attention of both disciplines, and we are justified, therefore, in considering further the question of their truth or falsity.

#### 14. IS DISTANCE IMMEDIATELY SEEN?

Having tried to establish our competence to deal with the issues raised by Berkeley, we may begin by asking whether he is right in holding that the immediate object of sight is a merely two-dimensional manifold. We have already examined, and rejected, various arguments purporting to show that the immediate object of sight *must* be two-dimensional, but this, it may be argued, does not close the issue. We have still to decide what in fact is the nature of the immediate object of sight. We have seen further that if we hold that the immediate object of sight is merely two-dimensional, we are forced to go on and say that we get our conception of three-dimensional space from touch, and that this space is numerically distinct from the manifold of sight. If, therefore, we could demonstrate that the space of sight and the space of touch are numerically identical, this would refute Berkeley's view, for it could hardly be seriously maintained that *both* are two-dimensional. However, this line of criticism may be left aside for the present, and we shall consider now only those objections to Berkeley's view which do not depend on proving that there is this numerical identity. A number of such objections are brought forward by T. K. Abbott in his *Sight and Touch*,<sup>7</sup> and our discussion is much indebted to him.

(i) It might be maintained that the whole conception of a merely two-dimensional manifold contains a contradiction, that it is a *priori* impossible. For it literally seems to lack the

<sup>7</sup> Longmans, 1864. This work is undeservedly forgotten.



solidity of something which could have an independent existence: it needs to be given a backing before it can exist in its own right.<sup>8</sup> This objection seems to have little weight, and we have in effect met it when we distinguished between the notion of a *surface*, and a two-dimensional manifold. A surface is an abstraction: it cannot exist independently of a volume of which it is the surface. But this does not show that there is anything inherently incomplete in the conception of a merely two-dimensional manifold.

(ii) We do better, therefore, to fall back on objections *a posteriori*. The most obvious objection, and one which some thinkers have thought quite sufficient to dispose of Berkeley's view, is that, on inspection, we see that the visual field is three-dimensional. It is just an obvious phenomenological fact, they think, that the distance of objects can be immediately perceived by sight.<sup>9</sup> Berkeley is led by a theoretical argument to deny an observed fact.

This objection has a good deal of weight. It seems to be particularly effective if we take the Berkeleyan view that what are immediately perceived are simply sense-impressions, whose whole nature is exhausted in being perceived, and about whose nature error is impossible. For we might argue against Berkeley that if what is immediately seen seems to be three-dimensional, then it *is* three-dimensional, without further question.

Nevertheless, Berkeley is not completely without resource in face of this objection. After all, he does offer some explanation of why we should be led into thinking that depth is immediately seen. He suggests that the bonds of association between the two-dimensional visible world, and three-dimensional tactual objects, are so strong that on *seeing* the former we are immediately led to postulate (or, rather, to take for granted) the existence of the latter; but then so easy and so natural is this passage from sight to belief that we are tempted to think we are immediately seeing the three-dimensional world. The error is particularly easy because we are much more interested in the tangible than in the visible world, the former being much more closely connected with a great concern of ours, physical pain and pleasure. After all, Berkeley points out, such a confounding of what is immediately perceived and what is not, does take place

<sup>8</sup> Cf. J. Cook Wilson, *Statement and Inference* (Oxford, 1926), sec. 539, pp. 797-8.

<sup>9</sup> This is the line taken by Professor H. H. Price in his book *Perception* (London, 1932), p. 245.

in other cases also: for instance we seem to see a man's anger, or hear his thought, as immediately as we see colours, or hear noises.

It may be objected to Berkeley here that if his account were true there ought to be some asymmetry between the visual perception of relations of left and right, up and down, on the one hand, and the visual perception of near and far, on the other. For on Berkeley's view the former are immediately seen, and the latter are not. But, it may be said, no such asymmetry reveals itself: our vision of distance seems to be in no way different from our other visual discriminations.

But Berkeley can quite plausibly argue that there *are* relevant asymmetries between our vision of distance, and our vision of other spatial relations. In the first place, if we consider the field of view, and if we consider only the horizontal and vertical interrelations of its constituents, that is, if we treat it two-dimensionally, then the spatial order of the constituents seems to be luminously clear; error seems to be almost completely banished. But relations of near and far are very much more vaguely discerned, as is shown by the fact that if we want to estimate the relative distances and positions of objects in the visual field, we try to get them *sideways on* to the line of vision. Secondly, there is the phenomenon of the apparent 'flattening out' of the field of view when we close one eye. This could be taken to suggest that our estimates of distance by the eye are not grounded on immediate perception, but on cues, one of which is linked with using both eyes (perhaps, as Berkeley suggests, the different amounts of muscular strain involved in making the eyes converge on different distances). For, Berkeley could argue, what is added by using two eyes is unlikely to be an increased power of *immediate* perception of depth. But, once this is granted, it is quite plausible to suggest that such perception of depth as we have with one eye only is also not immediate, for if the considerable difference between perception with one eye only and perception with both is due solely to extra cues, such cues may account for all visual perception of depth.

These replies, of course, do not *prove* very much, but they do show that Berkeley can point to relevant asymmetries between the visual perception of distance, and the other spatial discriminations that we make by sight. There is something peculiar about the visual perception of distance, and so, although the simple argument that distance seems to be immediately seen is a strong one, Berkeley can make some sort of shift to meet it.

(iii) The objection we have been discussing to Berkeley's

theory points out that distance *seems* to be as immediately seen as anything else that is seen. It might be strengthened in the following way. On Berkeley's theory the immediate perception of two-dimensional visible objects suggests to our minds something that we find by experience is closely connected with these objects: a three-dimensional *tangible* world. It follows that when somebody says that it seems to him that distance is immediately perceived, he is saying that he seems to have immediate *sight* of something that has a merely *tangible* existence. He appears to have immediate vision of tangible objects. Now, it may be argued, such a mistake is surely preposterous. We might perhaps think that we immediately see something we do not really immediately see, but surely it must be something which it is at least possible to see immediately. The confusion of senses would be too much. Since such a mistake would be impossible, it follows we are right to think that distance is immediately seen.

It seems, however, that Berkeley can reply that such confusion between the senses actually occurs in certain other cases, besides that of the seeing of distance. If we look at a stone wall, while it is still beyond our reach, we may seem to be seeing its roughness or hardness in a quite direct way; the tangible properties of the wall seeming to be inseparable from the sight of the wall. If such synaesthetic phenomena can occur in other cases they may also occur in the case of the perception of distance. We think solidity into the visual world, so equally perhaps we think the tangible notion of distance into the visual world too. (It would have to be admitted, however, by Berkeley, that the 'illusion' is much more obstinate in the case of distance than in the case of solidity.)

(iv) Berkeley holds that we pass from seeing two-dimensional visible objects to thinking of those tangible objects which actually are placed at a distance from us by a process of association of ideas built up by an experience of the conjunction (in time) of visible and tangible objects. It might be questioned whether the conditions necessary for building up such an association really obtain. For if such an association is to obtain there will need to be a pretty constant association between visible and tangible phenomena. Such association does not occur, it may be said. Our visual field contains a very great number of objects, but how many of the objects that we are seeing do we also touch? Only in a very small number of cases are we actually looking at and touching the very same thing simultaneously (for example where we look at a penny we are holding in our hand).

Are these cases enough to establish a transition so easy that we seem to ourselves to be actually seeing distance? Indeed, as Abbott points out<sup>10</sup> our position is even worse than this for in the case of objects that lie beyond our reach there can *never* be any co-existence between the perception of the visible object and the perception of the tactual object which is at a distance. To touch the object I have to walk up to it, but by that time the immediately visible object will have changed its nature. It may be replied that the associations are built up between objects that do not exist simultaneously but successively. I see the billiard-ball, and then I touch it. But difficulty remains because I now have to build up an association between what I immediately see now, and what I will touch as a consequence of *one* of the very many different actions I may carry out. (I may see the billiard-ball, and then turn away from it.)

Here, too, Berkeley can defend himself. He might agree that the associations between visible and tangible objects would have to be built up on a rather slender basis of experience. But it is a well-known fact that associations *are* built up very easily where our interests are vitally concerned; in particular, where our pain and pleasure are concerned. The burnt child shuns the fire after only one experience, simply because the fire hurt severely. Now, as Berkeley himself points out, pain and pleasure are very closely bound up with touch, and not very closely with sight. It is therefore very natural that we are quick to learn our way round the tactual world, and to be very good at interpreting visible signs in order to know what tactual experiences we may expect in certain contingencies. So we become very good at establishing the distances of things 'just by looking'. In the second place, if this line of defence collapses, Berkeley could always fall back on rejecting the whole story about building up correlations between visible signs and the distance of objects by experience, and instead postulate an instinctive tendency to make a correct connection between certain visible signs and distance. As we saw in the previous section this is the way out of the difficulty taken by J. S. Mill. Of course this is obviously an *ad hoc* hypothesis, and, in the absence of independent evidence for Berkeley's account of the objects of sight and touch, it has little to recommend it; but it is a possible line of reply, which at least keeps Berkeley's case alive.

(v) Finally, we may consider a line of criticism which seems to be the most damaging of all to Berkeley's case. We have seen

<sup>10</sup> Op. cit., ch. iii, pp. 19-21.



that in order to explain our possession of, our familiarity with, and our confident application of, the concepts of distance and of three-dimensional shape and size generally, Berkeley is obliged to say that we get our experience of objects falling under these concepts by touch. And certainly, once sight is excluded, there seems to be no other form of sense-experience which will do the job adequately. Even if, as Mill suggests, the distances of objects are known instinctively; there being an automatic transition from visible sign to a knowledge of the distance of an object; a transition not dependent on experience; we must still have some *experience* of distance and of three-dimensional shape and size in order to know what it is that we are correlating with the visible objects. If we take Berkeley's view of sight, we must say such experience comes from touch. The difficulty for Berkeley may then be stated very briefly: our tactual experience of extension is so very vague that it seems impossible to say that we get our experience of three-dimensional things solely through touch.

Let us consider first how, on Berkeley's view, we find out the three-dimensional shapes and sizes of things. Obviously, it will be a matter, for the most part, of feeling things with our hands. But what in fact is such tactual experience like? As Abbott points out: 'in the tactual idea of an object, the most obtrusive qualities are those of hardness or softness, roughness or smoothness, adhesiveness, dryness, weight, etc.; the notion of figure is at best very obscure and indefinite.'<sup>11</sup> It may even be argued that 'our tactual idea of an object' excludes extension altogether. This will be discussed in the next section; for the present we may confine ourselves to asserting with Abbott that such experience is certainly very indefinite. Suppose that I am not allowed the use of my eyes, but am able to handle a cube and a sphere. Clearly, I will be able to form a fairly accurate notion of their size and shape after a bit of handling. But it would have been much simpler to have used my eyes; in this case a glance or two would have sufficed. Now a cube and a sphere are the very simplest of all three-dimensional shapes. If we take objects having a more complex shape the difficulty of estimating the shape by touch alone becomes quite fantastic. Suppose, for example, you tried to determine the outline of a flower by touch alone. Yet there is no difficulty in determining shape and size by the eye: it is the normal method. Touch is superior to the (naked) eye in only

<sup>11</sup> *Op. cit.*, p. 143. 'The notion of figure' is also very indefinite in kinaesthetic experience.



one respect: it can better detect small irregularities in the surfaces of things. In all other cases the eye has the superiority. (It may be that blind men develop an extraordinary ability to tell the shapes and sizes of things by touch alone. But, according to Berkeley, when it comes to determining three-dimensional size and shape we are all in the position of blind men. Yet, as the considerations mentioned above show, we have in fact no such skill.) These facts are exceedingly difficult to reconcile with the view that touch is the sole way of immediately apprehending three-dimensional objects. How can we apprehend a thing's shape and size via mere signs more clearly and easily than by an apprehension of the shape and size itself? Yet this is the consequence of Berkeley's doctrine. The same difficulty appears in connection with our recollection, as well as our perception, of shape and size. When we remember the shape and size of a thing, the accompanying image, if there is one, will almost invariably be a visual not a tactual image. On Berkeley's theory we should expect just the reverse. Why image the sign, and not the thing itself?

We might ask, indeed, whether our tactual experience of extension, so far from being adequate to determine the real size and shape of things, is even adequate to determine that the objects we feel with our hands have three and only three dimensions? This seems to be immediately evident to sight, but it might be quite a difficult job to determine by touch alone. If distance is immediately perceived by sight the difficulty is at once removed.

The difficulties Berkeley's view faces with regard to the apprehension of the shape and size of things is only increased when we come to consider the judgment of distance. What is it to discover the distance of an object which is, say, a hundred yards away, *by touch*? Berkeley has to reply that distance is measured by the motion of a man's body, which, he says is 'perceivable by touch'.<sup>12</sup> He is here referring to what we should now call kinaesthetic experience.<sup>13</sup> Now the nature of this experience is rather obscure. (We shall have to consider it again briefly in the

<sup>12</sup> *N.T.V.* 45.

<sup>13</sup> Psychologists would now distinguish this from the sense or senses of *touch*, the latter term being reserved for perceptions of pressure, temperature, etc., that are caused by contact with the *skin*, a use that seems natural in any case. But, very confusingly, Berkeley lumps both kinaesthetic and cutaneous sensibility together under the same word. Perhaps he is under the misleading influence of the doctrine of the 'five senses', and so has to fit kinaesthetic experience in under touch.

next section.) What is it to apprehend that my body is moving without the use of my eyes? Can we really say that there is an *immediate* apprehension of change in position? It is at least arguable that all we have is certain kinaesthetic sensations;<sup>14</sup> connected, for example, with the motion of the legs or arms; which, by experience, come to be associated with locomotion. Now if this were so, if kinaesthetic experience gives us no immediate apprehension of the motion of our (three-dimensional) body, Berkeley could give no account of how we perceive the distances of objects. If, alternatively, he says that 'distance' simply means certain sorts of sensation continued for a certain length of time, he has quite falsified our ordinary notion of distance, the sort of thing we seem to perceive by sight.

But even if we reject this view of kinaesthetic experience as too harsh, and grant that it involves an immediate perception of the motion of our body, Berkeley's troubles would not be over. When we estimate the distance of an object some way away by the eye we mean, of course, the distance *in a straight line*. Now, if Berkeley is right, we should be able to decide whether we are moving in a straight line or not quite independently of vision. If we cannot, we cannot estimate distances non-visually. But in fact it is notoriously difficult to decide whether or not we are walking straight without the use of our eyes. But if we need our eyes to know whether we are proceeding straight this suggests that lines out from the eyes are the immediate objects of vision.

These simple considerations, then, indicate how difficult to defend is Berkeley's view that distance is not immediately seen. If there were really formidable arguments on the other side, which seemed to show that distance could not be immediately seen, we could perhaps produce auxiliary hypotheses to explain away the apparent objections. (Mill, for example, admits that the vagueness of our tactual experience of extension is a difficulty for Berkeley's theory but suggests that at the tender age when these correlations between two-dimensional visible objects and three-dimensional tangible ones are built up, the child's ideas of tangible extension and magnitude are fresh and vigorous, only later become staled and faded by custom!) But since, as we have seen, the proofs that distance is not immediately seen all

<sup>14</sup> According to E. G. Boring in his standard work, *The Dimensions of Consciousness* (New York, 1933), these involve only dull pressure and dull pain.

break down, and since distance seems to be immediately seen, while Berkeley's theory faces all sorts of difficulties, there is no reason to think his view right, and good reason to think it wrong.

# 15. WHAT ARE THE IMMEDIATE OBJECTS OF TOUCH?

As we have seen, Berkeley gives little consideration to the question of the nature of touch. For him it is simply a *deus ex machina* which yields the perception of distance, and of three-dimensional objects, which sight has failed to give. He makes no attempt to discuss in any detail the nature of tactual experience. (If he had undertaken such a discussion it would almost certainly have shown him some of the difficulties of his position.) Subsequent philosophical discussions of perception have followed him in neglecting touch, and thinking almost exclusively about sight. It may therefore be of some intrinsic interest, as well as casting more light on Berkeley's position, to consider the nature of touch more closely. We may start by considering the interesting view put forward by Mr Warnock in the third chapter of his book on Berkeley.

Warnock points out that there is a sense of the word 'touch' which does not imply that I am *feeling*, or am in any way aware of, the thing I am touching. In this sense of the word I am touching a thing when I am in physical contact with it. Nothing more is required. Touching, in this sense, does not even require contact between a physical object and an animate or conscious being. Two stones can touch each other. Furthermore, he thinks, this is the fundamental sense of the word 'touch'. Why is there, then, a perceptual sense of the word? Why do we speak of 'the sense of touch'? Warnock answers: 'When (say) my fingers are in contact with my desk, I normally have some feeling *in my fingers*. It is by such feelings that I know when I am touching something . . .'<sup>15</sup> But, he points out, it is possible to touch objects without having such feelings, and I can, abnormally, have these sensations or feelings without touching anything (for example after putting down a heavy suit-case).

Warnock's view has the merit of being a clear and definite hypothesis, in a field cloudy with vague talk about 'tactual experience'. It explains why we use the same word 'feeling' in connection with bodily sensations and with tactual 'perception'. If I look at an object I normally have little consciousness of

<sup>15</sup> Berkeley, p. 47. My italics.

myself as affected, although a dazzling light may give me unpleasant sensations in the eyes. But, on any view of touch, a consciousness of myself as affected plays a major part in tactual experience.<sup>16</sup> Warnock is only suggesting that this is all there is to tactual experience.

Let us consider, first, how Berkeley's argument would be affected if Warnock's account of touch were correct. It seems clear, on this view, that touch would give us no immediate perception of physical objects. When we touch something, then, if we are lucky, we have certain feelings or sensations in our body, and so we are able to say what sort of thing it is that we are touching. This means that such knowledge as we get by touch will have to be obtained in the first place by correlating sorts of sensation with the sort of object that causes the sensation. How, then, can we know that there are objects outside us which cause these sensations, and how can we know what sort of things they are? Unless we can find out about our environment we can never build up the correlation, but, by hypothesis, such a discovery cannot be made by touch. We must discover the nature of our environment by some other sense than touch. But this consequence is fatal to Berkeley's position. For if sight gives us a merely two-dimensional world, and if the 'sense of touch' is confined to mere sensations, what sense can give us our experience of distance, or of three-dimensional objects generally? Hearing, taste and smell obviously could never do the job alone. If tactual 'perception' is reduced to the having of certain bodily sensations, kinaesthetic 'perception' must surely be treated in the same way. Yet it cannot be denied that sense-experience does give us access to three-dimensional objects (or three-dimensional appearances, if we take Berkeley's phenomenalistic line). The only thing to say would be that distance is immediately seen.

But should we accept Warnock's view of the nature of touch and of kinaesthetic experience? In the first place, it might be objected that even on Warnock's own premisses the 'sense of touch' does give us immediate information about *one* three-dimensional object, that is, our own body. Our bodily sensations are located at different parts of our body, including its surface,

<sup>16</sup> This is why, on any view of the matter, seeing an object and feeling the same object must be a very different thing. For even if there is immediate perception of a round thing in the latter case, there will also be an experience of the effect the thing has on the perceiver's body which will make the total experience quite different from that of seeing the same thing. This fact alone may explain the bewilderment of cataract patients when they first regain their sight. (Cf. sec. 12.)



and they even seem to have a certain voluminousness; they seem to fill, admittedly in a very vague manner, portions of the body. Can we say, then, that when we are said to feel an object other than our body, we are at least *immediately* aware of a portion of our own body?

Now Warnock might reply to this by saying that this view involves the quite false assumption that sensation involves coming to know the existence of certain states of affairs. When we have one of the many different sorts of feeling that can be brought together under the term 'organic sensation' we do not come to know something (unless, of course, we have learnt by experience that this bodily feeling is as a matter of fact connected with some bodily or extra-bodily happening). To feel dizzy in the head, to have a muscular strain in the arm, or a pain in the hand, are not species of cognition. We can only think that they are species of cognition if we confuse sensation with *perception*. If I look at my hand I can become aware that its surface has a certain colour and contour; seeing involves cognition. But to have a pain in my hand does not involve coming to know something about my hand. Feeling pain is not a species of perception. It is true, of course, that we speak of the pain as being 'in' the hand; but, Warnock might argue, whatever the force of this usage, we ought not to say that any perception of anything going on in my hand is involved. There is nothing to be observed there ('the pain') which I can perceive although the surgeon cannot. Being in pain is not a form of awareness at all.

This line of reply has a good deal of force (although there are problems connected with the 'location' of sensations which admit of no easy solution). But there is a second objection to Warnock's account of touch which is more serious. If we consider a man born blind who never gains his sight, then, on Warnock's view, with the dubious exception of hearing, smell and taste, the blind man has no direct perception of the world at all. He can hear noises, smell smells, taste tastes, and he will have various bodily sensations. All the rest of his knowledge of the world will be inferential, based perhaps on the fact that he has been taught that having certain sensations means that his body is in a certain condition or that there are certain physical things in some relation to his body. For the greatest part he will have to take the world on trust: he can never check up on what he is taught by using his sense of touch, for this will only yield him new sensations. It is not even clear how he can *understand* the



meaning of physical-object expressions. Certainly his *knowledge* of the physical world will be almost all inferential. This seems very strange, and it inclines one to suggest, against Warnock, that touch involves *some* immediate perception of the physical world.

But Warnock might reply to this by asking what exactly it is that is immediately *perceived* by touch. This question, as we shall now see, admits of no easy answer.

It may be said that the immediate objects of tactual perception are simply the physical objects in contact with the sensitive portions of our body. Similarly, it may be said that the immediate object of kinaesthetic perception is the motion and posture of a particular physical object, our body. But this answer involves certain difficulties. In the case of sight, for instance, it is not enough to say that we immediately see things or physical objects. What we immediately see is *coloured* things, or things qualified by some other visual quality. There are no things *simpliciter*: a thing must be a thing of a certain sort, having certain qualities; and in the case of the other senses besides touch, that is, sight, sound, taste and smell, what is *immediately* perceived is something of a certain sort.

So when it is suggested that touch gives us immediate perception of the objects touched, Warnock may fairly ask what sort of qualities or properties we attribute to the thing perceived. This question is not easy to answer, as we shall see when we run through some of the answers that might be suggested.

Suppose it is said that what are immediately perceived by touch are the *surfaces* of things, or some other purely spatial determination of objects. Now just as there are no things *simpliciter*, so there are no surfaces *simpliciter*: there are only surfaces of a certain sort. The immediate objects of sight are not surfaces, but are coloured surfaces, and in the case of the immediate objects of touch also it seems that they will have to be surfaces of a certain sort.

One attractive suggestion is that the roughness or smoothness of a surface can be immediately perceived by touch. Rough and smooth things feel different to the touch: there is not need to call in the eyes. Indeed touch may be more reliable than the naked eye in the case of minute irregularities. But the trouble about roughness and smoothness is that the main criterion for a thing's being rough or smooth seems to be a purely spatial or geometrical one. In saying a surface is rough we are implying something like this: that it is uneven or irregular as compared

with other things or with the surface of the skin of my hand. (Similarly, the main implications of calling a surface smooth are also geometrical.) Now, if our previous line of argument has been correct, it is not enough to say that we immediately perceive by touch an uneven or irregular surface, for to say this is simply to specify further the geometrical properties of the surface. It is really no better than saying we immediately perceive by touch the surfaces of things. We still must answer the question what sort of surface it is: our perception cannot just be a perception of spatial properties. No doubt the geometrical implications of 'rough' and 'smooth' do not completely exhaust the meaning of the words, but Warnock can very plausibly suggest that the surplus of meaning is exhausted by the special sorts of *sensation* which we get when in contact with surfaces of an irregular or regular sort.<sup>17</sup>

Nor need we say that there must be further qualities immediately perceived by touch in order to be able to speak about the tactual perception of irregular or regular surfaces at all. Perhaps we perceive visible irregularities and regularities, and then find that visually observed contact with such surfaces is accompanied by certain bodily sensations, sensations which can then serve as marks of the presence of a thing with a certain sort of surface even in the absence of vision. (The difficulty that we are *better* at discriminating roughness and smoothness by touch than by sight is not hard to meet. We discover by sight that certain large-scale irregularities give rise to certain sensations. When we get these sensations without visible irregularities we postulate invisible irregularity, which is later confirmed by examination of the object by magnifying devices.) Our use of touch to discover that a surface is rough or smooth need not, therefore, involve any immediate perception of external things by touch.

What about hardness and softness? Perhaps we immediately perceive things or the surfaces of things as hard or soft by touch. But it seems that these notions can be unpacked too, and that the unpacking fails to reveal anything besides sensation, and certain spatial or geometrical properties of objects. When we say that the surface of a thing is hard do we refer to anything but facts of this sort: contact with the object gives me certain sensations, when I press against it my flesh gives rather than it, it does not break up, or alter its shape easily? (A similar account can be

<sup>17</sup> The sensation increases in proportion to the roughness of the surface and to the speed with which our skin moves over the surface.

given for 'soft'.) But we are still left wanting to know what sort of thing *it* is that can give me certain sensations, that does not alter its shape easily, etc. We have not really been able to provide any non-spatial properties of objects which are immediately perceived by touch. Professor Price, in his book *Perception*, talks of 'prement' or 'pressure-surfaces',<sup>18</sup> but it is surely suspicious that he has to *manufacture* a name for the quality of the surface alleged to be immediately perceived by touch; a name, too, which is based on the *relation* a thing has to our body when pressing against it.

The same sort of considerations apply in the case of weight. To the extent that we judge weight simply by tactual means, an account of such judgment in terms of sensation alone seems very plausible. To estimate the weight of a thing tactually we rely on muscular sensations, etc. This explains why a suitcase 'feels heavier' after we have carried it for some time: the felt muscular strain becomes greater, and so we are inclined to think the case heavier than it is, because these sensations are our only means of judging weight tactually.

Other properties that we normally discover by touch, for example, stickiness, slipperiness, wetness and dryness, seem to admit of a similar account. In all these cases analysis seems to fail to reveal anything that could be immediately perceived by touch except spatial properties. Certainly such descriptions imply something about the nature of the object touched: they do not refer simply to our sensations. But it seems that the extra properties that these descriptions imply involve only spatial properties or dispositions of the objects touched.<sup>19</sup> (For example, a sticky thing is one that tends to remain in contact with our skin or with another object, unless some force is exerted to prevent this.) And it seems in each case that knowledge of these spatial properties of the objects could have come from sight. We cannot completely rule out the possibility that, for example, Professor Price is right in postulating his 'pressure-surfaces' which are immediately perceived by touch; but, when we come to think about such qualities as hardness, the decision of perception seems to go against him. There is something *ad hoc* and contrived about the postulation of such qualities; qualities which a philosopher cannot even find a name for in ordinary language. It is true, of course, that we are inclined to think of

<sup>18</sup> p. 280 and elsewhere.

<sup>19</sup> In conversation with me, Professor J. A. Passmore characterized this distressing phenomenon as 'the evaporation of quality'.

touch as pre-eminently bringing us in contact with reality, what is real being what is solid or tangible. It might seem that this indicates that touch must involve perception of some actual quality of physical objects. But our attitude to touch, and to the solid, can be sufficiently explained when we remember its very close connection with our pains and pleasures.

So it seems that the qualities of objects discovered by touch and kinaesthetic sense dissolve into mere spatial properties of objects. We never perceive any qualities of objects to correspond to colours, sounds, smells or tastes, qualities which are not so reducible. This is a very curious conclusion, and it strengthens the view that these spatial properties are originally perceived by other means (by the eyes), and that 'touch' is only a matter of using bodily sensations to conclude that contact is taking place with objects having these spatial properties.

But we must not be too hasty. There is one case where it seems that we immediately perceive by touch qualities of physical objects. The temperature of objects in contact with our body is immediately perceived by touch (by 'temperature' I mean simply heat and cold). Yet heat and cold are not spatial properties of objects, nor are they immediately perceived by sight, sound, taste or smell.

It may be objected that when we are in contact with a hot or cold object all that happens is that we have a certain bodily *sensation* of heat and cold, which then informs us that our body is in contact with something of a certain temperature. A portion of our body *feels* hot or cold just as it may feel sore or feel itchy.

But although we do use the language of feeling in connection with temperature there is a vital difference from the case where, for example, I feel a pain or an itch in my hand. If my hand feels sore or feels itchy, it cannot be asked whether it really is sore or itchy. But if my hand feels hot or feels cold, then the hand may or may not actually *be* hot or cold. I can be mistaken about my bodily temperature, that is, my hand can feel cold, yet not be cold, in just the same way that my shirt can look blue, yet not be blue. So, unlike feeling pain or feeling itchy, feeling hot or feeling cold seem to be species of perception. We perceive that portions of our body are hot or cold, perceptions which, like all other perceptions, can involve illusion. Once we have seen this point, we can hardly deny that touch gives us an immediate perception of the temperature of other physical objects besides our own body, namely, those objects in contact with the sensitive



portions of our skin. We can immediately perceive by touch that the water is hotter than our hand.

So if we cannot accept Warnock's view that the tactual and kinaesthetic senses involve nothing but having bodily sensations, yet if we find a difficulty in saying that immediate tactual and kinaesthetic perception is confined to mere spatial properties of objects, we may suggest that the objects immediately perceived by these senses are *temperature* volumes or surfaces, hot or cold things or surfaces of things. The view is certainly a strange one, but the alternatives seem equally unpleasant.

Our brief investigation of the nature of touch and kinaesthetic sense has therefore raised more difficulties than we can solve. Warnock's views of these senses, that they are confined to bodily sensations, involves saying that touch gives us no direct perception of the physical world, a view that is difficult to accept. In any case it cannot deal with our immediate awareness of temperature. But if touch and kinaesthetic sense do give us immediate perception of objects, such perception seems confined to the spatial properties of these objects, with the exception of heat and cold. It seems, therefore, that we must either allow immediate perception of spatial properties without perception of the *nature* of the objects having these properties, or else say that they are perceived as temperature-surfaces or volumes.

We have seen that if Warnock's view is correct we have no immediate perception of extension by touch or kinaesthetic sense. This would mean that Berkeley's thesis that distance is never immediately seen is made quite untenable, for there would then be no sense by which we could get an experience of distance. (Sound, taste and smell would obviously be inadequate by themselves.)

If there is immediate perception of objects by touch and kinaesthetic sense Berkeley still has a leg to stand on for he could argue that we learn about distance and the existence of three-dimensional objects from these senses. Nevertheless, all the criticisms that were made in the previous section would still stand. In particular, it is abundantly clear that our experience of extension through touch is very much vaguer than our visual experience, and this difficulty seems too much for his theory. The result of this section, then, if we are correct, is neither to strengthen nor weaken Berkeley's already difficult case. We may hope, however, that a little has been done towards the elucidation of the nature of touch, a task of some intrinsic interest, and one that Berkeley ought to have pursued further.



16. ARE VISIBLE AND TANGIBLE EXTENSION  
NUMERICALLY DISTINCT?<sup>20</sup>

We have seen that Berkeley is forced to hold that visible and tangible extension are numerically distinct: that strictly we never see and feel the same object: because he holds that distance is never immediately seen. But we saw also that the contention that visible and tangible extension are numerically distinct does not depend on saying that distance is never immediately seen. Even if Berkeley were to grant that visible extension has three dimensions, and that visible and tangible extension are specifically identical, he might still hold that the two sorts of extension are numerically distinct. Such a position is held, for example, by Bertrand Russell. It is this sort of position that we shall now examine.

There is, indeed, a very persuasive dialectic which leads us to say that they cannot be numerically identical.<sup>21</sup> By sight we perceive visible objects (colour-surfaces, etc.), and we can also perceive by sight spatial relations between visible objects. Similarly we can perceive by touch tangible objects (tangible surfaces), and can also perceive by touch the spatial relations of tangible objects, or different parts of the same tangible object. (I am simply assuming here that we do perceive extension by touch, whether as temperature-surfaces or in some other way. If Warnock's view of touch is correct, then, of course, the whole of the argument of this section largely loses its point.) Now if the common-sense view is correct there are spatial relations, usually relations of coincidence, between, for example, colour-surfaces and tangible extensions. At the very place where my finger is just touching a coloured surface it is also touching a tangible surface. But now, by what sense is it that I can perceive this relation of the visible and the tangible? Sight would inform me only of the presence of the visible object, touch would inform me only of the presence of the tangible object. The spatial relation falls between the two senses. To see the relation I would have to see both its terms, but one of the terms is invisible. To perceive the relation by touch I would have to perceive both terms by touch.

<sup>20</sup> My argument in this section is peculiarly indebted to Professor John Anderson.

<sup>21</sup> Experimental evidence of failures of correlation of the 'realms' of sight and touch seems a much less convincing line of argument. Someone who held that visible and tangible extension were numerically identical could explain such failures as being simply mistakes, a failure to perceive that the 'realms' were really identical.

But one of the terms is intangible. The total situation is the object of no sense whatever, and so cannot possibly be perceived. Hence visible and tangible things are given as belonging to different realms, and it is a quite unverifiable hypothesis that there are any spatial relations between them.

This argument, itself persuasive, seems to be unconsciously reinforced by one out of two rather naïve pictures of the nature of sense-perception. In the first place, we may get the idea that the various sense-organs, the eyes, the ears, the nose, etc., are each a separate passage-way to a central presence-chamber of the mind. What is perceived is something that comes bodily up the passage-way, in the way that some scholastic philosophers thought the sensible species emitted by objects did. It would follow from this picture of perception that what comes up one passage must be an object numerically distinct from the object that comes up a different passage. The mind may be able to correlate these deliverances, but they remain numerically distinct. It follows that the extension that comes up the visual passage, at any time, must be quite distinct from the extension that comes up the tactual passage at the same time, for the same thing cannot divide itself into two, and be entire in each passage-way simultaneously. Hence we are led to separate visual and tactual extension. They may be specifically, but they cannot be numerically, identical. In the second place, we may come to think of the sense-organs as a series of windows or portholes through which the soul can 'look out' and perceive the external reality. In the case of sight and touch, since the visual window gives us only visual things, and the tactual window tactual things, relations between them can never be perceived.

Now it is easy enough to see that these pictures are radically mistaken. The former would involve all the difficulties of the crudest sort of representationalist theory, besides raising all sorts of pseudo-questions. (For example, 'Are there two passages to correspond to the two eyes, or not?') The latter would lead to our saying that since the sense-organs are mere windows we need eyes, ears, etc. *behind* these windows in order to be able to perceive by their means. But it is not so easy to be delivered from their subterranean influence, and this influence reinforces the *argument* to prove that the visible and the tangible cannot be spatially related.

Perhaps we may be most easily released by examining our perception of *time*. In looking at Berkeley's contention that there are no ideas got by sight and touch which have even a specific

resemblance, we saw that, whatever we may say about space, the 'ideas' of succession and co-existence are certainly exceptions to this thesis. When I say that there is a succession of happenings in the field of view, and when I say that there is a succession of felt happenings, I am clearly using the word 'succession' in exactly the same sense in each case; visual succession is not specifically different from tactual succession. Now can we say that visible succession is *numerically* different from tactual succession? Obviously, we cannot. I can perceive that a happening in the field of view, say the blazing-up of a flame, and a tactual event, say feeling the warmth of the air, are co-existent or successive. The consequence of denying that it is numerically one and the same time perceived by sight and touch would be that it would become completely impossible to make *any* sort of correlation between the deliverances of the two senses. They would be diverse realms which had no relations at all. (This is why perception of time, that is, perception of succession and co-existence, plays an absolutely vital, although hardly acknowledged, role in Berkeley's theory. Lacking any 'spatial cement' to concrete the visible and the tangible together, all the more weight must be thrown on time.) It appears, then, that we cannot deny that, for example, we can perceive that this visible motion precedes this felt pressure. But now, exactly the same argument that was used in regard to space can be applied to time. Sight is restricted to the observation of visible successions and co-existences, touch is equally restricted to tangible successions and co-existences, and so there is no sense which could observe that this visible motion occurred just before that felt pressure. If the argument is valid when applied to space, it is valid when applied to time. This parallelism, however, serves to show that it cannot be valid in either case, for it certainly must be false in respect of our perception of time. Hence, by discovering the flaw in the argument here as it is applied to time, we may hope for deliverance from the same dialectic when it is, much more persuasively, applied to space.

Now escape from the whole difficulty has been sought by postulating a 'common sense', which correlates the various deliverances of the particular senses, and builds up some sort of systematic picture by their aid. But this is, in effect, to admit that we are given a series of independent messages by each sense, and that the mind has then to *decide* what their spatial and temporal relations are, basing itself on these messages. Such a line of thought easily leads on to the view that spatial and

temporal relations are not so much perceived, but rather imposed, by the mind.

To seek such a solution, however, is already to make too great a concession to the argument. The real trouble lies in treating the perceptions 'of particular senses' as being *deliverances of that sense* at all. Visible objects, for instance, are perceived by means of the eye, but they are not perceived *as being perceived by means of the eye*. There is nothing in what we see that announces itself as seen. We have to *discover* that what we call visible objects are perceived by the eye, using simple experiments such as that of shutting the eyes and finding we can no longer perceive these objects, opening the eyes and discovering that we can perceive them again: an application of the methods of difference and agreement. Our visual apparatus is simply an object that must be in a certain state if perception of certain sorts of thing (for example coloured things) is to take place. They are not passageways for sensible species, nor are they windows opening out on to the world for the mind to gaze through. In the same way 'tangible objects', although perceived by touch, are not necessarily perceived as touched. The connection between objects perceived by touch, and the bodily mechanism (the sense) which is a necessary condition for their perception, is contingent. What shall we say, then, about the perception of such situations as that of a colour-change in a piece of metal being preceded by a temperature-change? We shall say that this situation is 'perceived by sight and touch', but all this means is that, unless both our eyes and our sense of temperature are working normally we shall not be able to perceive such situations. But this does not mean that one part of the total situation is perceived by sight, as through one window, and another part of the situation is perceived by the sense of temperature, as through another window, leaving open the problem of the perception of their connection. The colour-change is perceived by sight, and by sight alone; the temperature-change is perceived by touch, and by touch alone; but the whole situation, 'colour-change preceded by temperature-change', is perceived by both sight and touch, and it makes no sense to ask which part of this relational situation is perceived by sight and which part by touch. Like two men who each try to lift a weight, neither sense can get anywhere by itself; but when both are operating the weight can be lifted, that is, perception of the total situation can occur. But it is impossible to divide the work between them. It is simply a contingent fact that the perception of some situations requires two senses. What



is perceived is perceived as belonging to a single temporal order: colours, temperatures, sounds, smells, tastes, etc. are perceived to co-exist or succeed. It is only *afterwards* that we can attribute the perception of different elements in this continuum to different senses, and we cannot on the basis of this empirical discovery, go on to raise the problem how these scattered deliverances were ever gathered together in a single continuum. They were never scattered in the first place, for there is no reason why 'perception across the senses' should not occur in suitable conditions: for example, when both senses are working.

The exposure of the argument with regard to time, where we can see clearly that its conclusion must be false, paves the way to seeing that it is similarly fallacious when it is applied to the perception of the spatial relations of the visible and the tangible. The fact that to perceive that the surface I see and the surface I feel are spatially coincident would require the joint operation of two senses, without our being able to say what part of the perception each is responsible for, does not prove that there can be no such perception, any more than it does in the case of time. It may just be that we can perceive such spatial relations when both visual and tactual sense-organs are operating correctly. It seems, therefore, that we are not *forced* by this argument to separate the visual and the tangible.

Nevertheless, even if it be granted that this argument is invalid, it may still be maintained that, as a matter of fact, the visible and the tangible are in no way spatially related. The question arises, therefore, whether it can be shown that such a view is actually incorrect. Such a view, admitting that distance is immediately seen, but still denying the identity of visual and tangible space, escapes the objections that we brought against Berkeley's actual view in our two preceding sections. We shall examine two lines of argument against such a position, one of which may be called an *a priori* argument, the other a *posteriori*.

The first argument is put by Kant in the 'Transcendental Aesthetic': '... we can represent to ourselves only one space; and if we speak of diverse spaces, we mean thereby only parts of one and the same unique space.'<sup>22</sup> Kant seems to be arguing that the conception of extensions which are not spatially related to each other is an incoherent one. This would seem to rule out separate visual and tangible extensions as Berkeley or Russell conceive them.

<sup>22</sup> *Critique of Pure Reason* (translated by Norman Kemp Smith, London, 1929), p. 69, A25-B39.



Although interesting, however, this argument is extremely difficult to assess. Kant says that we can *represent*<sup>23</sup> to ourselves only one space, and if he is simply talking about psychological capacity of the imagination, his contention is a very plausible one. The conception of 'separate spaces' seems to be extremely hard to grasp imaginatively. It seems impossible to visualize these spaces except as areas separated by a spatial gap. But whether this psychological fact points to a genuine logical incoherence is very difficult to decide. Kant might try to support his position by arguing that any space must be infinite in extent, or, at any rate, be boundless, even if finite, as in the case of a space with a 'curvature'. For the conception of a spatial boundary does seem to involve there being space on either side of the boundary. If this be granted, the diverse spaces postulated by Berkeley and Russell would each of them have to be boundless. The question might then be raised whether two such boundless spaces, the visible and the tactual, could co-exist. The co-existence of two boundless spaces is certainly a strange conception, but again it seems uncertain whether or not it is an incoherent one. Indeed it is hard to see (or at any rate the writer finds it hard to see) how the argument can be advanced one way or the other. In view of this difficulty it seems at least more profitable to leave Kant's argument aside, and, admitting provisionally that it does make sense to talk of visible and tactual objects which are extended but which have no sort of spatial relation to each other, examine objections based on *a posteriori* reasons.

Arguing from experience, then, there is at least one very important objection to the thesis that visible and tangible extensions are numerically distinct. This view is compelled to assert that it makes no sense to talk about the spatial relations of visible and tangible objects. The only relations to be discovered between objects seen and objects touched are temporal ones and perhaps relations of resemblance and causation. Now the objection to this doctrine is very simple: we think that there actually are spatial relations holding between the objects of the two senses; we think, indeed, that we perceive such relations. We think we can perceive that at the very place where we see a visible surface there is also a tangible surface.<sup>24</sup> Even where we see something which is intangible, or feel something which is

<sup>23</sup> In the German 'Kann man sich nur . . . vorstellen'.

<sup>24</sup> Professor Price has pointed out to me that this is not strictly accurate. Since my fingers, etc., are not transparent I never see *exactly* the same part of the thing that I am touching. But I do not think this really affects the present argument.

invisible, there may still seem to be spatial relations between the two objects, though the spatial relation involved is not one of coincidence. We have seen furthermore that the attempt to say that there can be no such perception because it involves perceiving the relation of an object of one sense to an object of another is invalid. The difficulty for Berkeley, then, is that on his view we have to write off what seems to be a deliverance of perception as a mere mistake. How could we come to mistake a merely temporal connection for a spatio-temporal one?

Unfortunately, Berkeley never notices that this is an important objection to his view, and so never attempts an answer. Interestingly enough, however, materials for an answer are provided by Hume in connection with a rather different problem.<sup>25</sup> In Book 1, part iv, section 5 of the *Treatise* Hume argues that where two objects have a close relation to each other such that the perception of one naturally makes one think of, or even infer the present existence of the other, it is very natural for the mind to add some *new* relation, to fill out as it were, and give body to, the relations that already exist between them. It is this cause, he thinks, that makes us think that the taste of an object actually qualifies the area that the object occupies, that gives the taste a 'local conjunction' with the object that has the taste. Yet, in fact, he says, it is actually *absurd* to think that tastes have any spatial properties, that is, that they can qualify a volume or surface in the way that colours do.<sup>26</sup> In fact the taste of a spatial object is simply temporally and causally associated with the object.<sup>27</sup> Yet so strong is our tendency to add new relations to

<sup>25</sup> It is interesting to see that the doctrine of the association of ideas, so important for Berkeley in explaining why vision makes us think of distance although it is not immediately seen, is also worked out by Hume in much greater detail than by Berkeley. However there is probably very little direct influence, for in the *Treatise* Hume speaks of our judging distance by the eyes by means of the angles which rays of light form at the objects seen. (Cf. *A Treatise of Human Nature*, Everyman edition, i. 62). He could hardly have said this if he had studied Berkeley's essay at all closely. It is true that this statement is corrected in the Appendix (ii. 319), but this means that any close consideration of Berkeley's view must have come after his main doctrines had been worked out.

<sup>26</sup> 'The first notion of space and extension is derived solely from the senses of sight and feeling; nor is there anything, but what is coloured or tangible, that has parts disposed after such a manner as to convey that idea.' Hence, says Hume, 'an object may exist, and yet be nowhere', op. cit., p. 224.

<sup>27</sup> 'Though an extended object be incapable of a conjunction in place with another that exists without any place or extension, yet are they susceptible of many other relations. Thus the taste and smell of any fruit are inseparable from its other qualities of colour and tangibility; and whichever of them be the cause or the effect, it is certain they are always co-existent. Nor are they only co-existent in general, but also contemporary in their

associated things that we confusedly imagine that the taste itself qualifies the volume of the thing. The same thing holds, he thinks, in the case of sounds and smells.

This is just what Berkeley needs. It explains very well why we erroneously think visible and tangible objects are spatially related. They are very closely associated: we constantly infer from the perception of the one the existence of the other. These relations are temporal only, or temporal and causal, but they are so intimate that the mind is led, erroneously, even confusedly, to 'add' the further relation of spatial conjunction.

Now if this attempt to explain away what we seem to perceive as being a mere mistake is to be at all plausible, it is obvious that we shall have to be convinced that the sort of phenomenon Hume points to really occurs. Only if it really is a property of the mind to imagine confusedly that further relations hold between objects it already knows to be intimately related in certain ways, will Hume's explanation rescue Berkeley from his difficulty. Hume points to three other instances of the same phenomenon, each of which we shall examine. Firstly, he points out, philosophers who believe in the representative theory of perception, that is, that what we immediately perceive is a subjective impression *caused* by an external object, have a great tendency to suppose, without any warrant, that the external objects resemble the impressions. Here resemblance is illegitimately added to causation.<sup>28</sup> Actually, Hume does not state his case as strongly as he could here. In fact we have a quite *general* tendency to suppose that objects that are causally related to each other also resemble each other; for instance, our tendency to suppose that matter and motion can only give rise to matter and motion.<sup>29</sup> Nevertheless, even so strengthened, Hume's example is not a convincing one. For although in fact many causes and effects do not resemble each other, yet it still *makes sense* to say that they do resemble each other. In 'adding' this extra relation, the imagination does not act nonsensically. But if visual and tactual space are really apprehended as numerically distinct from each other, visible and tactual things being related temporally and causally only, then to attribute spatial relation to such objects involves absurdity. Hume's example does not show

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appearance in the mind; and it is upon the application of the extended body to our senses we perceive its particular taste and smell' (Hume, op. cit., pp. 225-6).

<sup>28</sup> *ibid.*, i. 208 and 226.

<sup>29</sup> Cf. Hume's own discussion of this point, *ibid.*, i. 234-8.

that the imagination has any tendency to 'add' relations which are not even really possible.

Secondly, Hume points to the fact that: 'In our arrangement of bodies, we never fail to place such as are resembling in contiguity to each other, or, at least, in correspondent points of view . . .'<sup>30</sup> Hume is here pointing to the fact that we tend to put like things together; arrange objects in a symmetrical fashion so that like corresponds to like, etc.; that is, that we take a certain interest in order and uniformity. We put books on the same subject, or of the same size and format, together. Here we are adding the relation of *contiguity* to objects already judged alike. This instance is not very convincing either, because here we do not *feign* a new relation between the two objects; rather we *create* a new actual relation; for example, we put like things in the side-by-side relation. This difference greatly weakens the force of the example when applied to Berkeley's case.

The same criticism may be made of Hume's third example (which deals with the origin of property):

. . . as property forms a relation betwixt a person and an object, it is natural to found it on some preceding relation; and, as property is nothing but a constant possession, secured by the laws of society, it is natural to add it to the present possession, which is a relation that resembles it. For this also has its influence. If it be natural to conjoin all sorts of relations, it is more so to conjoin such relations as are resembling, and are related together.<sup>31</sup>

In this example, again, it seems that the addition of the relation is determined not at all by any tendency to feign gratuitous relations. For Hume has just been arguing, with a good deal of force, that it is convenient to society, and recognized as such by its members, that *somebody* should be secured stable possession; that is, we have independent reasons for wanting to add this relation. Wanting to create a permanent owner, we are naturally led by an already existing, and resembling, relation, that of present possession, to establish 'ownership' in the present possessor. But this can be explained solely by an association due to resemblance.

But, as Hume himself half admits,<sup>32</sup> it is really the case of tastes, sounds and smells that forms the real evidence for his principle, and it is on them that Berkeley must depend to answer

<sup>30</sup> *ibid.*, i. 226. Cf. also iii. 208, n. 1.

<sup>31</sup> *ibid.*, iii, 208, n.1.

<sup>32</sup> *ibid.*, i. 226.



our objection. If it is true that they cannot qualify volumes, that they are not in space, and that it is absurd to treat them as spatial (but nevertheless we do confusedly think of them as being spatially related to the objects they qualify, in addition to their real relations of causality and co-existence), then it will be highly plausible to suggest that we make the same mistake with regard to visible and tangible extensions. Indeed, the latter will form an even better case, because, if we take the numerically distinct visible and tangible extension to be *specifically* the same, the relation of resemblance will be added to the relations of co-existence and causality as a foundation for our feigning.

It is proposed, therefore, to make an extended digression with the purpose of examining Hume's view of sound, taste and smell. This will, in the first place, cast light on the present question; but, in the second, it will serve to supplement the *New Theory* as a whole. We have argued that the central theme of the *Essay* is a theory of the general nature of the reality revealed by the senses of sight and touch, or, as Berkeley himself conceived the matter, a theory of the general nature of visual and tactual appearances. More particularly, the *Essay* is concerned with the *spatial* structure and interrelations of visible and tangible objects. It is very natural to go on to consider whether the objects of the other senses have or have not spatial properties and relations. By so doing we shall be able to form a general picture of the objects of the senses as a whole, in respect of spatial properties. This in its turn will be no small contribution to the larger task of describing the whole general nature of the reality revealed to the senses, or, in phenomenalist terms, the general structure of appearance. (For the empiricist, in particular, who holds that all our knowledge is derived from, or based on, sense-experience—possibly with the addition of introspection—such an inquiry must be of great interest and importance.)

In this inquiry about sounds, tastes and smells, then, Hume is carrying on the work begun by Berkeley in the *New Theory*. The question is of all the more interest because Hume's view seems to have been generally accepted by philosophers,<sup>33</sup> so far as they have considered the question at all, yet on examination it turns out to be far from satisfactory.

33 However, cautious dissent is offered by Professor Price. Cf. *Perception*, p. 229: 'Sounds, smells, and sense-data of heat and cold are more puzzling. It seems to me that all these display a kind of simultaneous muchness, which one hardly knows whether to describe as "size" or not, and all have the characteristics of being "here" and "there". But it is quite clear they do not have shapes . . .'



## V

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### *Sounds, Tastes and Smells*

#### 17. ARE SOUNDS, TASTES AND SMELLS IN SPACE?

Berkeley has nothing to offer on this subject, except an incidental reference in section 46 of the *New Theory*. Here he says that distance is perceived by the eye only in the sense in which it is perceived by the ear, when, for example, I say I hear a coach in the distance. This suggests that he might have accepted Hume's thesis, at least with regard to sound. We shall therefore examine Hume's argument in Book 1, part IV, section 5 of the *Treatise*, which is, as far as I know, the only extended treatment of the subject. We shall first summarize Hume's main line of argument.

He asserts that our notion of space and extension is derived solely from the senses of sight and touch, none of the other objects of experience being spatial. These other objects fall into two groups; firstly all those objects and occurrences discerned by what Hume calls 'reflection', what we might call introspection, if we believe there is such a thing, that is, our thoughts and emotions, our mental life generally; secondly, sounds, tastes and smells. Here, of course, we are concerned directly only with the second group. Anything that is in space, Hume says, must have spatial properties (size and shape), and have spatial relations to other spatial objects. There is only one exception to this rule: a mathematical point has position, that is, it has spatial relations to other objects, but has no size or shape. Now if sounds, tastes and smells are spatial they must either have size and shape, or else be located at points. But questions about the size and shape of these qualities seem to make no sense. It is *nonsense*, Hume says, to ask whether a particular heard sound, a particular taste, or a particular smell, is, or is not, round, square, or three cubic feet in volume. It makes perfectly good sense to ask about the duration of particular sounds, tastes and smells, but none to ask about their extension. There is a clear asymmetry between time and space here. It does no good to suggest that sounds, tastes and smells, although they lack shape and size, are nevertheless located

at points. For points can have a spatial *arrangement*, but it would be silly to talk of a circular arrangement of sounds, tastes or smells, in the way we might have a circular arrangement of coloured dots.

This argument of Hume's, then, purports to show, not that sounds, tastes and smells *are* not spatial, but rather that they *cannot* be spatial, that it makes no sense to talk of their having spatial properties at all. They are in time, but cannot be in space. Furthermore, since only spatial things can have spatial relations, they cannot even be spatially related or conjoined with spatial objects. Incidentally, Hume applies the same argument to mental phenomena, asking whether anyone can conceive 'a passion of a yard in length, a foot in breadth, and an inch in thickness?' The idea is as absurd as in the case of sounds, tastes and smells.

Before going on to criticize this argument, it will be well to get the question at issue in a clearer perspective. In the first place, Hume is not just putting forward the triviality that noisiness is not circular, or smelliness a foot square. Blueness is not circular or a foot square, either, but, of course, Hume is seeking to *contrast* sounds, tastes and smells with qualities like colour. The point is this: when I perceive a particular instance of a certain sort of colour, I perceive, perhaps, a coloured surface. The colour qualifies the extension, and the perception of colour is inseparable from the perception of extension. Now, according to Hume, when I hear a particular instance of a certain sound I do not perceive it as qualifying an area or volume, nor does it do so. It is quite unlike colour in this respect. The perception of a sound is inseparable from the perception of duration, as with all other perception, but hearing sounds involves no perception of extension. In fact it makes no sense to talk of sounds (or tastes or smells) qualifying an area or volume. The perceived colour-surface has shape, size and location. The heard sound has none of these things.

In the second place, the question has nothing to do with the question whether what is immediately perceived exists independently of the perceiver, or is a mere sense-impression. Realists, Phenomenalists, etc., may differ as to whether the perceived extension that is inseparable from the perceived colour is to be identified *simpliciter* with physical space, but nobody denies that there is an obvious sense in which colour is inseparable from extension. The parallel question whether sounds, tastes or smells are inseparable from extension is equally independent of our

theory of perception, just as the question whether distance is immediately perceived by sight is. We shall tackle the problem in a realistic way, assuming that perceived colour is located in public space, and asking whether sounds, tastes and smells are similarly located, but the question can be easily reformulated in more Berkeleyan terms. (Despite his anti-realistic views on perception Hume discusses the problem in the same realistic way. He sees that this does not matter.) If we hold a realistic view of perception, the question is one about the nature of certain of the objects revealed to the senses: if we do not, it is a question about the nature of certain appearances. It is the same question in each case.

In the third place, we may cast more light on Hume's argument if we distinguish two senses in which a thing 'cannot be spatial', senses which may be called 'weak' and 'strong' respectively. We may illustrate the two senses by considering two possible views of the nature of emotions, or passions as Hume would call them. We are not here concerned to decide between the two views; they are mentioned only to help us understand a certain distinction. Let us consider first the behaviouristic view of the nature of the passions. According to this view, for a man to be angry means that he is performing one out of a wide range of possible bodily actions. Depending on the circumstances of the case, striking people, shouting at them, or even ignoring them, may constitute the man's anger. If the man's anger is anything more than this it is only a matter of being disposed to act in certain ways, *if* certain situations arise. This behaviouristic view denies that there is a second realm beyond the realm of physical objects which houses the passions. Statements about a person's being angry are to be cashed in terms of statements about physical happenings alone. Let us now consider what will be the reactions of somebody who holds this view when he is confronted with the contention that the passions cannot be in space. It seems that such a contention ought to drag him two ways. He will be inclined to agree with it, on the one hand, for he recognizes that the passions have not got contours or spatial parts. Yet at the same time he will be inclined to disagree. For, on his view, statements about the passions are cashed solely in terms of the actions or dispositions of bodies, that is, spatial objects. Such a theorist will agree with Hume that it is nonsense to speak of a passion 'a yard in length, a foot in breadth, and an inch in thickness'; the logical grammar of 'anger' is such that questions about its spatial measurements are senseless. Yet, at the same

time, anger does not inhabit a non-spatial realm. Let us say, then, that for the behaviourist the assertion that the passions cannot be spatial is true in a *weak* sense only. Compare with this the traditional view of the passions, which holds that our anger is something quite over and above its bodily manifestations, existing in a different realm from the bodily realm. The traditional theorist will hold that the passions cannot be spatial in a quite radical sense, a sense which is quite incompatible with cashing statements about a man's anger solely in terms in statements about the actions and dispositions of objects in space. For the traditional view holds that although the passions may be related to the body by temporal and causal relations, they are quite distinct from the body. Let us say, then, that on this view the passions cannot be spatial in a *strong* sense of the words.

Having indicated this distinction between a weak and a strong sense of the phrase 'cannot be spatial' by reference to different accounts of the nature of the passions (between which we are not here concerned to judge) let us ask whether Hume's arguments, if they were valid, would prove that sounds, tastes and smells cannot be spatial in a weak or in a strong sense? Is it possible that although it makes no sense to talk of sounds, tastes and smells qualifying areas, or qualifying the parts of spatial things, still statements involving these qualities can be cashed solely in terms of the actions, dispositions, etc., of spatial objects? Or (if Hume is right) must we say that sounds, tastes and smells 'cannot be spatial' in a quite radical way, however they may be temporally and causally related to spatial things? Once the question is clearly posed there can be no doubt about the answer. It is impossible to give any account of sounds, tastes and smells in the sort of way the behaviourist may attempt an account of anger, any more than we could give an account of colour in the same sort of way. The very sound itself, the taste itself, the smell itself, are irreducible qualities in the same way that colours are irreducible qualities; there is no possibility of analysis. If you try to give an account of what it is to be blue, for example, in terms of light of a certain wave-length, you leave out the *blueness* in your analysis; blue is irreducible. Sounds, tastes and smells are in the same boat. It seems, then, that if Hume's arguments prove anything, they prove that sounds, tastes and smells cannot be spatial in a strong sense of the words. No doubt they are connected with spatial things by causal and temporal relations, but they themselves are distinct from spatial things.

Now that we have seen the nature and force of Hume's



argument we shall try to show that we do have good reason to think that sounds, tastes and smells do have size, shape and position. The first point to note is that much of our talk about these three sets of qualities seems to treat them as if they qualified volumes, or the spatial parts of things. We speak of the place the sound is coming from. We can often say 'just by listening' from what direction the sound we are hearing comes. Sounds are said to issue from lips, and to fill or fail to fill a room. Smells are also said to come from, and be at, places. They fill, or fail to fill, a volume. The fox's scent remains in the places he has recently passed through. Each part of a fruit is said to have a certain taste, or its sweetness is said to be found only at its centre. This suggests a picture of tastes qualifying the volume of the tasty object, as colours qualify it. It suggests that it is a certain area around a central source that comes to have a certain smell, the intensity being the less the greater the distance from the source. A similar picture is suggested for sound, except that sounds spread and then die away far more quickly than smells. The volume which is qualified by a certain sort of sound usually loses that quality very quickly.

Now it is true that we can interpret such talks as being metaphorical. We can say that the 'place' of a sound is simply the location of its physical source, and that a source of a sound is simply its cause, or the place where it sounds loudest when an ear is present there (generally the same place). We can say that the 'direction' that the sound is coming from is simply the direction that the ears must be turned towards in order to hear the sound most distinctly or loudly. We can say that talk of sounds filling rooms simply means that hearers at every part would hear the same sort of thing, and would hear it clearly and distinctly. Again we can say that the 'place' of a taste is simply the place of that object our tongue is in contact with when we taste that taste; that is, the location of a taste is simply the location of its cause. We can say that the 'place' of a smell is only the place where we smell something if we perform the physical operation of sniffing there. In this way we can certainly give some account of all these idioms without admitting that these qualities qualify areas or the spatial parts of things. But all this translation, it seems, is rather *ad hoc*. Why cannot we take our talk about these qualities at its face value?

The fair-minded genius of Hume recognizes these difficulties, and he tries to provide an auxiliary hypothesis to deal with them. He considers the case where we have a fig at one end of



the table, and an olive at the other. It is obvious that the idea of the fig includes its characteristic sweet taste; we 'unite' its taste with the visible and tangible qualities. The same goes for the taste of the olive. But then, he says, as the result of the close conjunction in our minds between the other qualities of the fig and the olive and their tastes (due to their temporal and causal relations), we come to think that the tastes themselves are actually spatially conjoined with the fig and the olive, and are spatially separated by the length of the table. Certain relations exist between the objects and their tastes, and it is a tendency of the mind to cement these relations by feigning the existence of a further relation. Hume explicitly extends this reasoning to the case of smells, and presumably would be prepared to do so with regard to sounds. Our ordinary thinking about sounds, tastes and smells, then, is not simply subject to illusion; it is guilty of the *absurdity*, reflected in some of our language, of taking these qualities to qualify spaces. It is only in the course of philosophical reflection that we come to see that it is nonsense to treat sounds, tastes and smells in this way.

To show that this *is* nonsense, Hume relies, in the main, on the argument we have already looked at. To speak of this heard sound being round, or this taste qualifying the parts of a fruit is, he declares, absurd. He does, however, back his position up with a second argument. When, in popular thinking, we attribute spatial properties to tastes, we do so in a very peculiar manner. We suppose that the tastes exist in (qualify) the whole of the fig or olive, but we suppose that they fill the whole without extension, and are entire in every part at the same time. This is as much as to say that the quality qualifies a certain place, yet also does not qualify it.<sup>1</sup> This incoherency in our thinking can only result because we do not want to go the whole way and say the taste qualifies every part, for this would give it a shape, which would be too ridiculous; yet at the same time we cannot quite give up the absurd idea that tastes do qualify the spatial parts of the tasty things. The half-heartedness with which we embrace the illusion is further proof that it *is* an illusion.

Hume's second argument, however, seems to be plainly wrong.

<sup>1</sup> 'We suppose that the taste exists within the circumference of the body, but in such a manner that it fills the whole without extension, and exists entire in every part without separation. In short we use, in our most familiar way of thinking, that scholastic principle which, when crudely proposed, appears so shocking, of *totum in toto, et totum in qualibet parte*: which is much the same as if we should say, that a thing is in a certain place, and yet is not there' (*A Treatise of Human Nature*, i. 227). The scholastics, of course, applied this doctrine to the soul.

When we taste a fig we do think of the taste as belonging to, or being in, every part (we may note that the different parts taste differently), but we do not think the taste is *entire* in every part, except in the harmless sense in which the blueness of a blue surface is entire in every part. It seems, therefore, that Hume's sole argument is the original contention that to attribute contour and size to particular instances of particular sorts of sounds, tastes and smells makes no sense.

Now Hume's position is obviously a very ambiguous one. On the one hand he says it makes no sense to attribute spatial properties to sounds, tastes and smells; on the other hand he admits that we often tend to think of them in this way. He explains the latter as a delusion. But may not the tendency to think it is nonsense to speak of these qualities as qualifying areas be the delusion, while what Hume takes to be the delusion be our maturer thought on the matter? May it not be that (a) we are not very interested in, (b) we are not very good at, determining the shape and size of the areas qualified by sound, taste or smell?<sup>2</sup> In the case of sounds they have so little permanence, and yet they spread so far and so fast from their source, that many different observers would be required to plot the places where the sound is. Similarly, it would need a very great deal of sniffing to establish the exact contours of a smell. Again, we are not normally very interested in establishing the exact location of tastes in the tasty objects. But in each case it seems that if we were sufficiently interested we could go through operations whose aim we could describe as the discovery of the shape, size and position of a sound- or smell-area, or the exact location of a taste-area in the object tasted. What is more it would not seem wholly implausible to say that these qualities were qualifying these areas or volumes in the same sort of way that colours qualify surfaces. A further point to be noticed here is that our perception of these qualities is a good deal vaguer than our perception of visual qualities: we do not have the sharp, clear-cut sort of perception that is associated with sight. It may be, then, that our apprehension of the contour and size of sounds, tastes and smells is equally vague and indeterminate; discrimination of the sort that we find in vision, where shapes and sizes are recognized at a glance, being impossible. It may be difficult in principle, as well as in practice, to *apprehend* the shapes and sizes of areas having these qualities.

<sup>2</sup> Some other animals whose senses are keener than ours may be better at this task than we are.

This very indeterminacy, however, may be brought as a criticism against the view which is being put forward here. A quality, it may be argued, qualifies a perfectly *determinate* area, or else it is nonsense to talk of it as qualifying anything at all. Sounds, tastes and smells do not qualify an area of determinate location, shape and size, and so they qualify nothing at all.<sup>3</sup> The answer to this argument must take two forms, depending on whether we say that what are immediately perceived by sight are independently existing objects, or are simply sense-impressions. In the former case it can be replied that the fact that the apprehension of the shape and size of certain objects is indeterminate does nothing to show that the shape and size itself is not perfectly determinate; our perceptions of wholly determinate things may be more or less determinate, that is, more or less precise, and in fact the different senses give us different degrees of precision, touch, for example, being much less precise than sight. If, alternatively, it is held that what are immediately perceived are simply sense-impressions, then it would have to be admitted that what is thus perceived is regularly indeterminate, even in the case of sight. The indeterminacy of the spatial characteristics of auditory, gustatory, and olfactory sense-impressions would have to be accepted as being in the nature of sense-impressions. They would simply be *more* indeterminate than the shapes and sizes of visual sense-impressions.

At this point, then, honours seem to be about even. In support of his view, Hume can point to the fact that it seems very strange to talk about the shapes and sizes of sounds, tastes and smells. On the other hand, some of our discourse seems to point the other way, and Hume has to bolster his view by saying that we do have a tendency, even in ordinary thinking, to commit the logical absurdity of making these qualities qualify areas or volumes. The alternative view, on the other hand, has no difficulty in accounting for our tendency to give sounds, tastes and smells spatial properties, but it has to be bolstered by a different auxiliary hypothesis—that the apparent absurdity of talking about sounds, tastes and smells in this way is not based on a point of logical grammar, but results rather from our lack of interest in, and our very imperfect and indeterminate apprehension of, the shape and size of areas qualified in this way. Each view has some plausibility, but each has to face obvious difficulties, although perhaps, if we had no further

<sup>3</sup> Cf. the argument about the perception of colour-surfaces in section 3 (v) of this essay.

considerations to guide us, Hume's view would appear to be the more satisfactory.

There is, however, a further line of argument which seems to tip the balance decisively against Hume. Let us look once again at Hume's example of the fig at one end of the table, and an olive at the other. Let us however slightly change the example, and make it a case of two exactly similar olives, the taste of each of them being exactly the same sort of taste. Despite this specific identity we can still speak of *two* tastes, just as we can speak of two olives, not meaning two different sorts of taste but simply two instances of the same sort of taste. We have two particulars falling under or instantiating the same universal. The two tastes would be numerically different, although not specifically different. Numerical difference, at a superficial level of reflection at least, is distinct from, and varies independently of, specific difference. Now the question for Hume is whether we can account for this numerical difference of the two tastes (that is the two instances of the same taste) without assuming that they qualify the places occupied by the two olives.

What makes two objects that exist at the same time *two*? Suppose that we have two exactly similar billiard-balls on a table at the same time, what makes them two? The answer, with respect to billiard-balls, is that they occupy different places. The same billiard-ball cannot be in two places at the very same time. If the two billiard-balls were to coalesce, magically, so that they occupied the very same place, we would not have two billiard-balls any more, but only one. Let us now assume, for the sake of argument, that the taste of an object does not qualify the volume occupied by the object. Suppose, then, that I taste an olive at one end of the table, and that you taste a qualitatively identical olive at the other. Why is it that we know, as we do know, that we are tasting two different instances of the same sort of taste? Well, why is it that we know we are each seeing two different instances of the same sort of olive-green surface? This is easy to answer: the two olives are separated in space, and so the two surfaces must be numerically different. But what about the different instances of the same sort of taste? By hypothesis, we cannot raise the question whether they are separated in space or not. Supposing it was suggested that the tastes we were each tasting were not only specifically, but also numerically the same; that we were seeing numerically different expanses of olive-green, but tasting the very same taste. It is useless to say that the taste of the object touching my tongue must be different from the



taste of the object touching yours. Certainly, our tongues are not touching the very same spatial object, but why may we not be tasting the very same taste? The taste is in time only. How is the question to be decided? It may be suggested that it is to be decided in a purely conventional way by simply 'giving a sense' to talk about two different instances of the same taste in the following way. We are to say that if two tongues are tasting two numerically different spatial objects—that is, if our tongues are in contact with them—then, even if the two tongues taste exactly the same sort of taste, this is *to count* as two numerically different instances of the same taste. But this is to make the numerical difference of the two tastes derivative from, or parasitic upon, the numerical difference of the two spatial objects. Is this good enough? Do we not think that the two tastes differ numerically in just the same sort of way that two billiard-balls, or two olive-green surfaces, differ? This answer makes the numerical difference of the tastes a quite different matter. If I eat an olive now, and you eat an identical olive the next day, the two instances of the same taste differ numerically in a perfectly straightforward way. Since the two times are numerically different, the two tastes are *ipso facto* numerically different. Yet if we are both tasting the olives simultaneously, are we to say that it is impossible to decide whether we are tasting numerically different tastes; or, alternatively, that the decision has just become a conventional one? It appears, then, that if we say that tastes do not qualify the areas of things we shall be forced to say that questions about the numerical difference of qualitatively identical tastes apprehended at the same time, are either undecidable, or are settled by mere convention. Both these alternatives are unpalatable. If, alternatively, we say that tastes qualify the volume occupied by the thing that has the taste in the same sort of way that colours qualify surfaces, then our troubles are over. Since the two identical olives occupy different spatial positions it follows at once that their tastes are numerically different in a perfectly straightforward way, and there is no need to explain away our conviction that they must be numerically different. It is clear that exactly the same argument can be put forward in the case of sounds and smells, so this is a general reason for rejecting Hume's thesis concerning these qualities.

(It is worth noticing that this argument we have just been putting forward can also be advanced against those who hold that minds are in time, but not in space, in the strong sense of the words 'not in space'; that is, against those who hold the



traditional Cartesian view. For it seems to be perfectly possible that there might be two different minds existing at the same time and each having identical contents, that is, having exactly the same experiences. But what, on the Cartesian view, would this principle of individuation be? What is it that makes them *two* minds? I believe that this difficulty was recognized by certain scholastic philosophers, who discussed it in connection with the individuation of angels.)

It seems, then, that there is a balance of reasons in favour of saying that these qualities do qualify places, that their instances have location, shape and size; although it would have to be admitted that our apprehension of these characteristics is somewhat vague. At the very least, perhaps, reasons have been given for not treating Hume's case as proved. Not all that appears logical absurdity at the first glance is actually absurd.

Before concluding this section, we should look at one objection of our whole discussion. It might be maintained that, in company with Hume, we have gone right off the track because what we have tried to treat as *qualities*—sounds, tastes, smells—are not really qualities at all, in the way that colours are qualities; but are simply *sensations* that we have, not characteristics that we perceive. On this view they are attributed to objects only in the sort of way that we attribute foulness to a toadstool, because it has the power to bring about a feeling of revulsion in us. However, there seems to be little force in this contention. In each of the cases it seems that we explicitly distinguish between these qualities and the feelings and sensations they may cause in us. We distinguish the loud sound from the unpleasant sensations I may have in my ears after hearing it; we distinguish the ticklings in our nostrils, or the tingling of our tongue, from the smell or taste of the object. Furthermore, we distinguish between real and apparent sounds, tastes, smells of things. We say that something sounds loud to us, tastes bitter to us, or smells in a certain way to us, yet allow that the object may not have these qualities. (In section 15 of this essay we made the same point about heat and cold.) Yet we do not distinguish between real and apparent tickles and tingles. Without further special reason given, there seems to be no reason to ignore these distinctions, and assimilate these 'qualities' to our sensations.

## 18. CONCLUSION

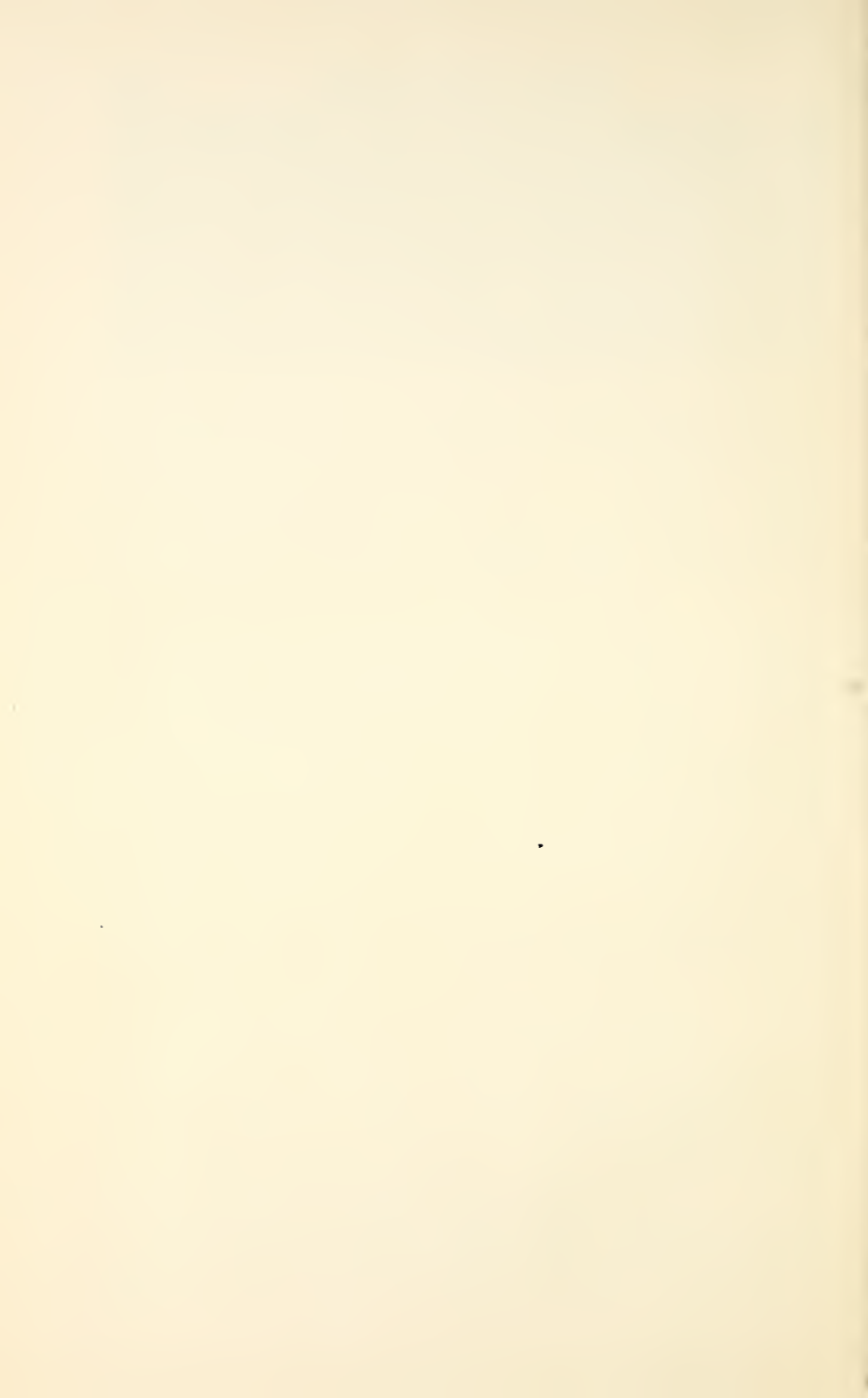
If our argument has been correct, that is, if sounds, tastes and smells do actually qualify spaces, or the parts of spatial things,

then Hume is left without any instances to support his thesis that, under certain circumstances, we may feign the existence of certain extra relations between objects that are already closely related even though the relation so feigned cannot possibly hold between these objects. This means that we cannot invoke his principle to explain away the conviction of common-sense that the immediate objects of sight and touch are spatially related to each other, and that we actually perceive this relation. Hence the Berkeleyan doctrine of the numerical difference of visible and tangible extension seems to be untenable. If there were special reasons for thinking that Berkeley's view must be correct, then we might look around for some way of explaining away what we seem to perceive. But there seem to be no such special reasons. (Similarly, once it is admitted that sounds, tastes and smells have spatial characteristics, there is no reason to postulate separate sound-, taste- and smell-spaces for them. They seem to stand in spatial relations to visible and tangible objects—as Hume admits—and no reason has been given for not taking this appearance at its face value.)

We may now sum up our criticisms of the main doctrines of Berkeley's essay. According to Berkeley, the immediate object of sight is a two-dimensional arrangement of 'light and colours'. We have argued that the immediate object of sight is a three-dimensional arrangement of visible surfaces, and, in certain cases, volumes. According to Berkeley, again, the objects immediately perceived by touch have no manner of spatial connection with visible objects. We have argued, on the contrary, that the qualities perceived by touch qualify the very same space as that immediately perceived by sight. Tangible surfaces in general coincide with visible surfaces; that is to say, most physical objects have both visible and tangible qualities. However, when we come to specify the nature of the qualities immediately *perceived* by touch (as opposed to the *sensations* that physical contact may give us) in addition to spatial properties we can find only heat and cold. (In the case of touch, unlike the case of sight, *immediate* perception seldom seems to extend further than surfaces actually in contact with the sensitive surface of our body.) Berkeley does not discuss the question whether sounds, tastes and smells have location or not, but we have argued, against Hume, that these qualities also qualify the very same space that is the immediate object of sight.

The conclusions outlined above form a portion of a much larger task, that of giving a *general* description of the nature of

the reality revealed to the senses; or, put in a Berkeleyan way, a general description of the structure of appearance. Our investigations (with the exception of our investigation of the nature of touch) have been restricted to certain questions about the *spatial* relations of the immediate objects of the senses. The views we have arrived at are very far from Berkeley's own, but this does not rob his essay of value. By ingenious and careful working out of his premisses, he has let us see the difficulties of one view, and so helped us to reach something which may be more satisfactory.



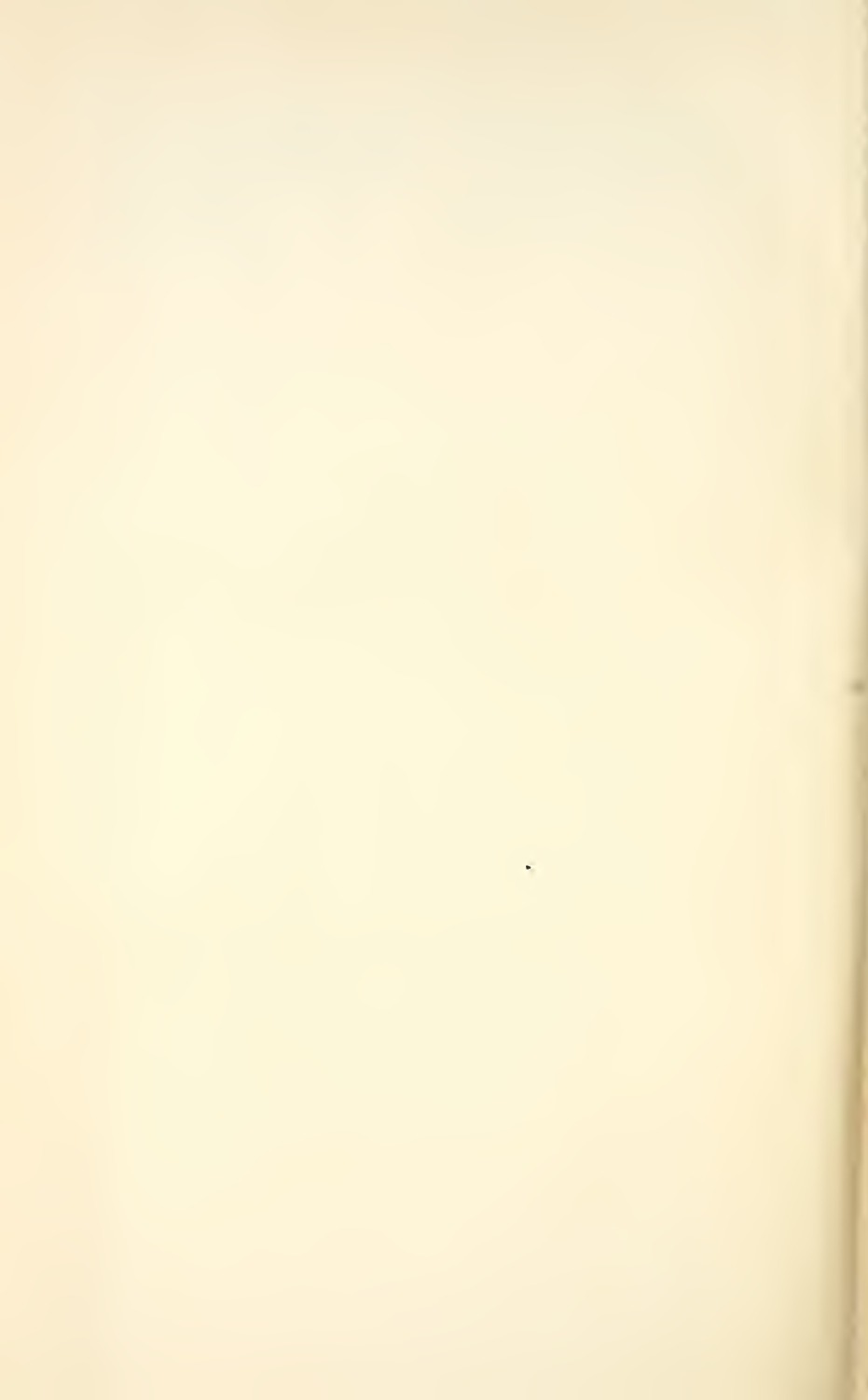
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